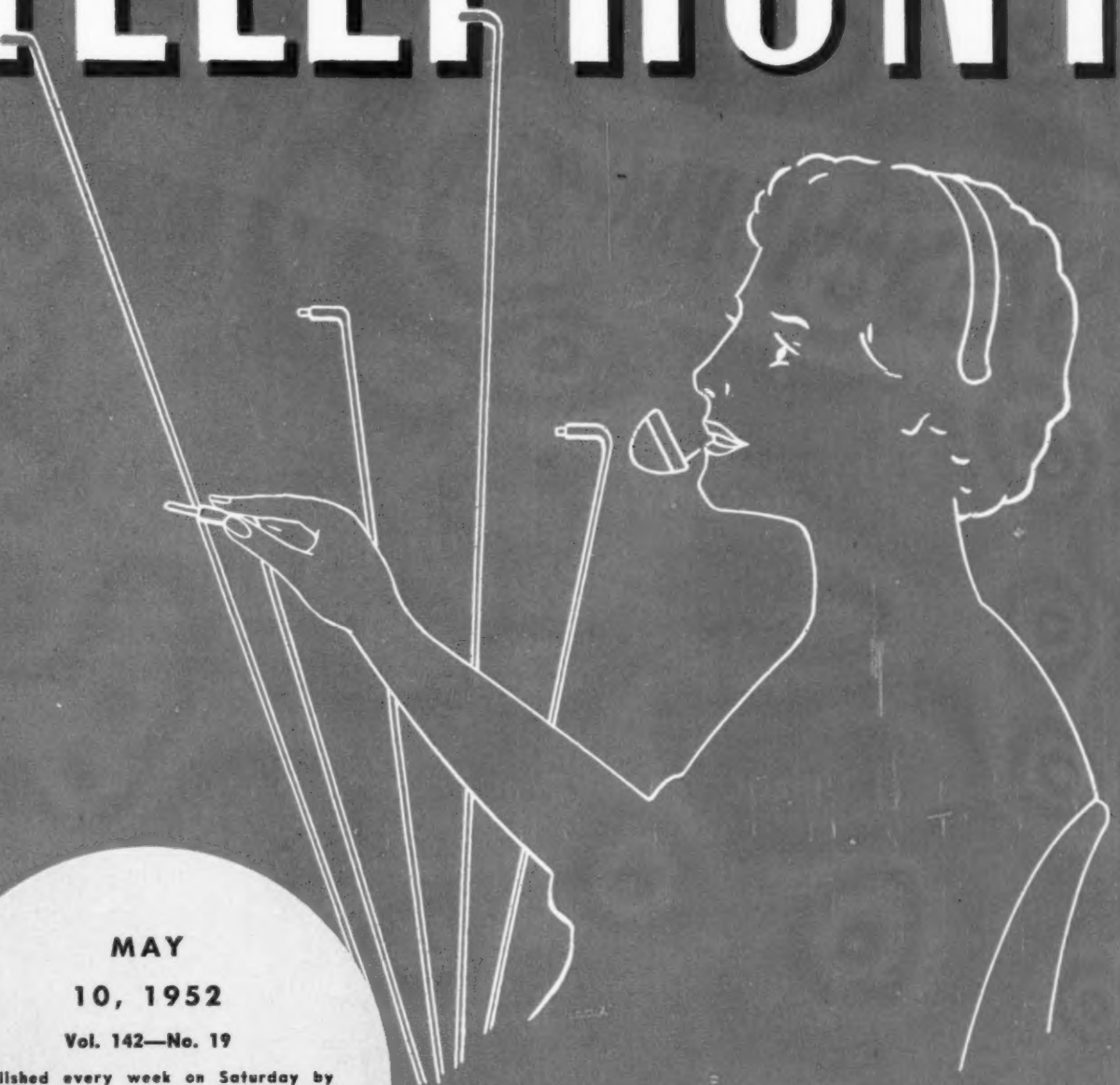
TELEPHONY



MAY
10, 1952
Vol. 142—No. 19
Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 So. Dearborn St., Chicago 5, Ill. Subscription $3.50 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of March 3, 1879.

THE JOURNAL OF THE TELEPHONE INDUSTRY

All the flexibility and dependability of **XY**

Now available in 3 standard types for private Dial Branch Exchanges

STROMBERG-CARLSON XY-PBX

The acceptance and ever-growing selection of the XY System for Central Office use is now known all over America—since no technique of dial-switching has enjoyed such a "trend" as has XY, these past few years.

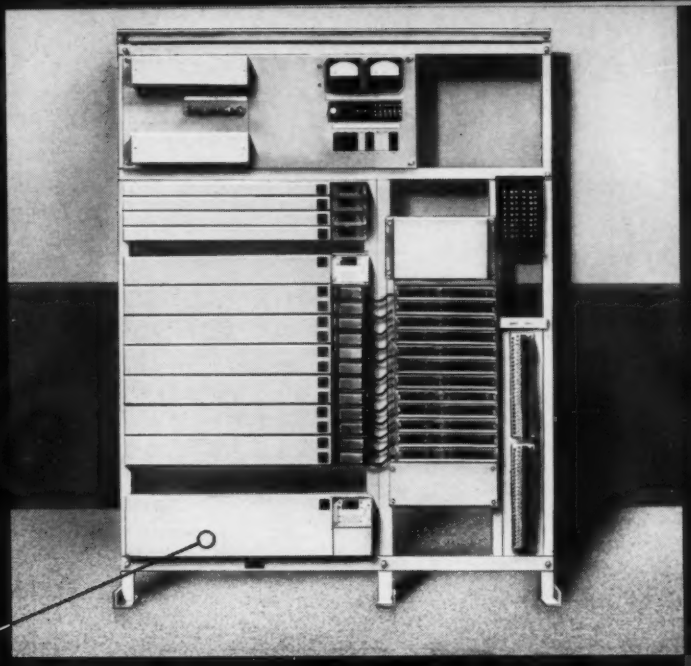
Stromberg-Carlson now offers to operating companies their choice of three XY Systems for Private Branch Exchanges. The advantages of such service are numerous—and three seem to merit special emphasis:

1. Companies already using XY service in their CDO equipment will be using the same switches in PBX installations.
2. Companies not presently employing XY will find that these PBX systems offer increased revenue . . . and at the *lowest maintenance cost* possible.
3. Addition of lines to original installations, up to ultimate capacity, may be made quickly, easily and at very modest cost.

Your further inquiries will be welcomed.

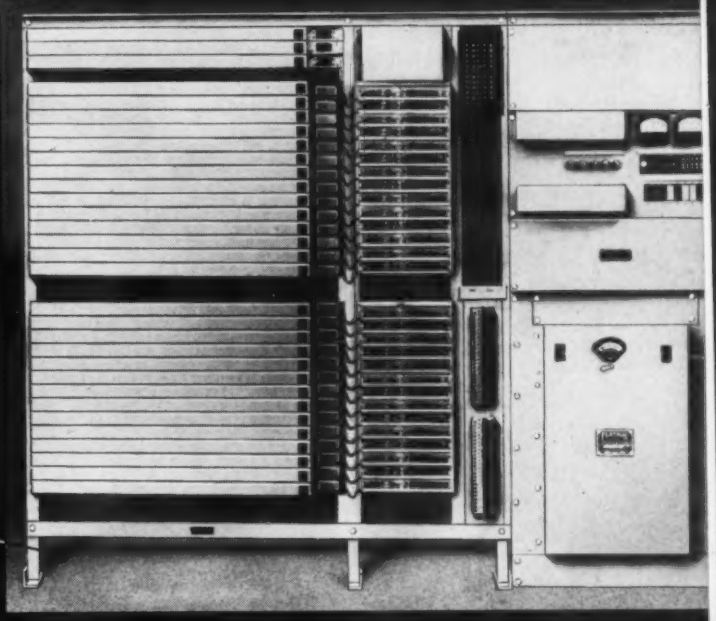
STROMBERG-CARLSON

FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y., BRANCH OFFICES: ATLANTA 3, CHICAG
KANSAS CITY 8, SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON CO. LTD., TORO



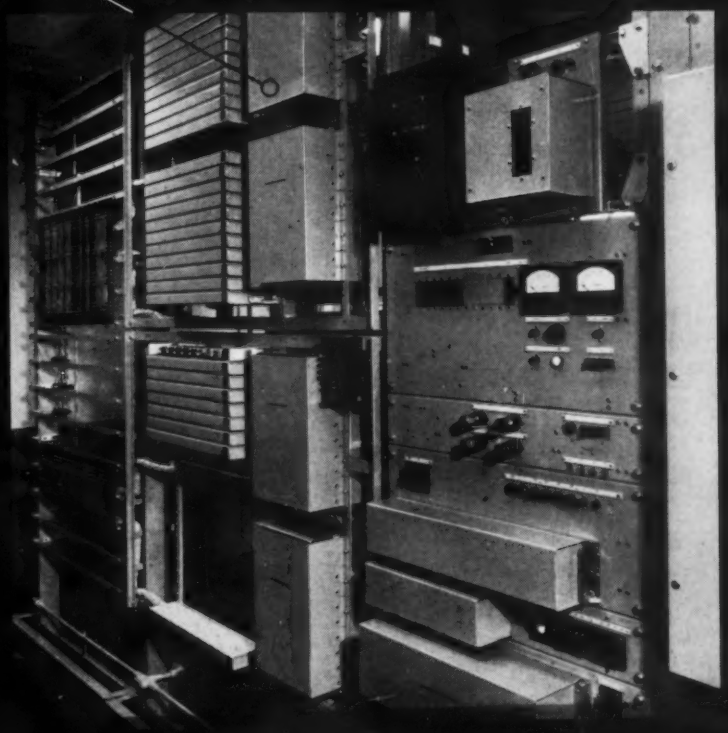
"F-40" XY-PBX

Ideal for the small office or factory. A single-party Finder-Connector system. Ultimate capacity: 40 Lines, 6 Links, 4 Central Office Trunks, 4 Information Trunks.



"F-80" XY-PBX

For medium-sized businesses; a single-party Finder-Connector system. Ultimate capacity: 80 Lines, 14 Links, 9 Central Office Trunks, 4 Information Trunks.



"TYPE H" XY-PBX

For the largest offices or plants—single or two-party Finder-Selector system of factory-wired shelf units, as used in XY-CDO and MCO installations. Ultimate capacity limited only by available floor space.

CAGO
DRON

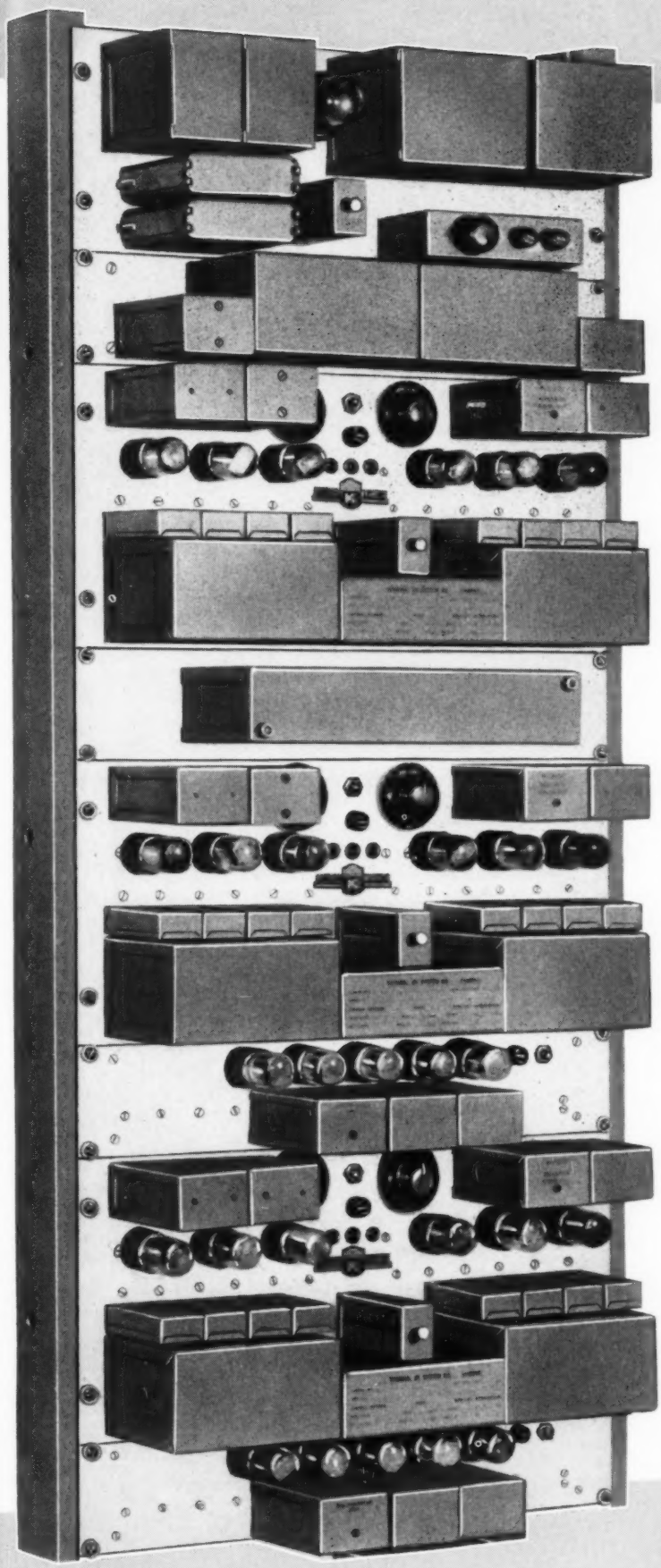
Installation and Maintenance *Simplified!*

with KELLOGG *Carrier*

NOW AVAILABLE *with* UNIVERSAL SIGNALLING

Kellogg *Transmitted* Carrier Systems can be installed and placed in service in minimum time—and maintained at minimum cost! These systems require no adjustment of oscillator frequencies or carrier leak! *Maintenance is simplicity itself!* . . . Since the carrier frequency is transmitted, measurements of terminal output and of the level of the carrier frequency received from the distant terminal may be easily and quickly made with a vacuum tube voltmeter without the use of a separate oscillator. Result: line attenuation at the carrier frequency being measured can be immediately determined and the problem of locating trouble is simplified to the nth degree.

UNIVERSAL SIGNALLING—Permits use in either dial or ringdown service, accomplished by strapping changes on the terminal strips. When connected for dial service, the signal unit is arranged to connect to a composite type trunk having T, R, A, B, E and M leads. In both ringdown and dial signalling, the frequency shift principle is used.



OTHER Advantages of KELLOGG Transmitted Carrier

Outstanding in design and workmanship, Kellogg Transmitted Carrier Systems offer you many advantages in telephony because they use the principle of transmitting the carrier frequency, instead of suppressing it.

NO SYNCHRONIZATION

Separate oscillators are not required in the receiving section of the carrier terminal — each sideband is demodulated by the same carrier frequency which produced it originally. With Kellogg, you will have no requirement for synchronizing or aligning oscillator frequency.

NO FREQUENCY DISTORTION

Kellogg Transmitted Carrier Systems are completely, continuously free of voice distortion due to frequency shift and speech is always clear. Why? Because voice frequencies cannot be shifted by a difference in oscillator frequencies.

NO CARRIER LEAK ADJUSTMENTS

You'll have no problem with carrier leak with Kellogg Transmitted Carrier Systems — and no adjustments for eliminating or minimizing carrier leak are required.

SIMPLIFIED, POSITIVE SIGNALLING

To provide ringdown service, ringing is accomplished by blocking the transmitted carrier frequency during the ringing period. In dial service, the transmitted carrier is shifted, using a frequency modulated signal unit. In both services, signalling may be accomplished over lines having attenuation values in excess of the allowable limits for the carrier talking circuit — simple, positive, foolproof! And no additional frequency bands are needed!

Send today for your free copy of "KELLOGG Type No. 5 Transmitted Carrier Telephone Carrier Systems." Get the facts— **and you'll get Kellogg!** Write Dept. 1-E-10

KELLOGG

SWITCHBOARD AND SUPPLY COMPANY

6650 South Cicero Avenue, Chicago 38, Illinois

Superiority

Here's Proof of

3029 Pressure-Creosoted Poles set on New Haven's right-of-way in 1918— 98.7% still in service after 34 years

● In 1918, the New York, New Haven & Hartford Railroad set 3029 yellow pine poles—pressure-treated with Creosote Oil—to carry a communications cable line along its right-of-way in New York and Connecticut. Today, 34 years later, only 41 of these poles have been removed for failure. The other 98.7% are still in service.

The poles have undergone five inspections to date; another is scheduled next year. Each inspection consists of careful visual examination, thorough soundings and test borings where necessary.

The first inspection, in 1933, showed four poles had been removed. By 1941, 10 additional poles were gone; by 1945, four more; by 1948, 12 more, and in 1951, 11 more replacements had been made.

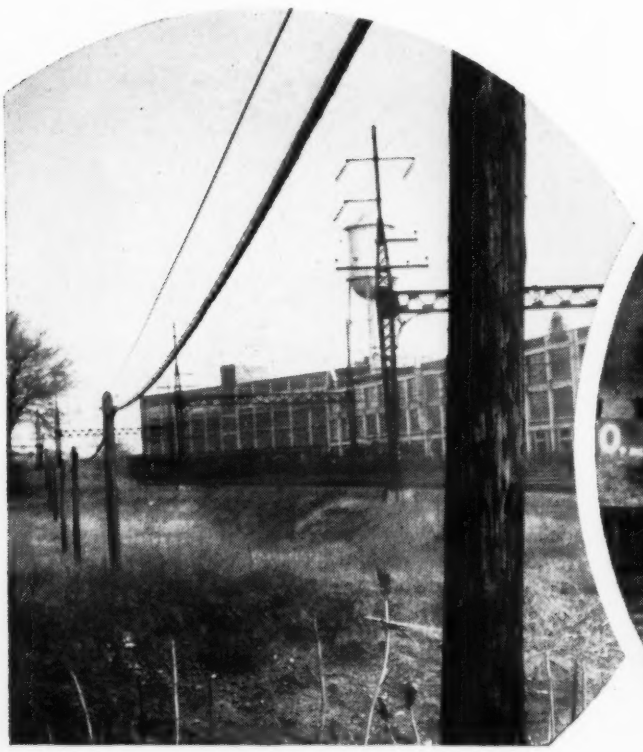
All poles on the line are yellow pine, subjected to the "full-cell" treating process (A. T. & T. specification L-3239) with 12-pound retention.

J. D. Rogers, the New Haven's Superintendent of Communications, says, "We have found that a pole treated with the 'full-cell' process can be expected to stand up without replacement for 25 to 35 years, and possibly for a longer period than that."

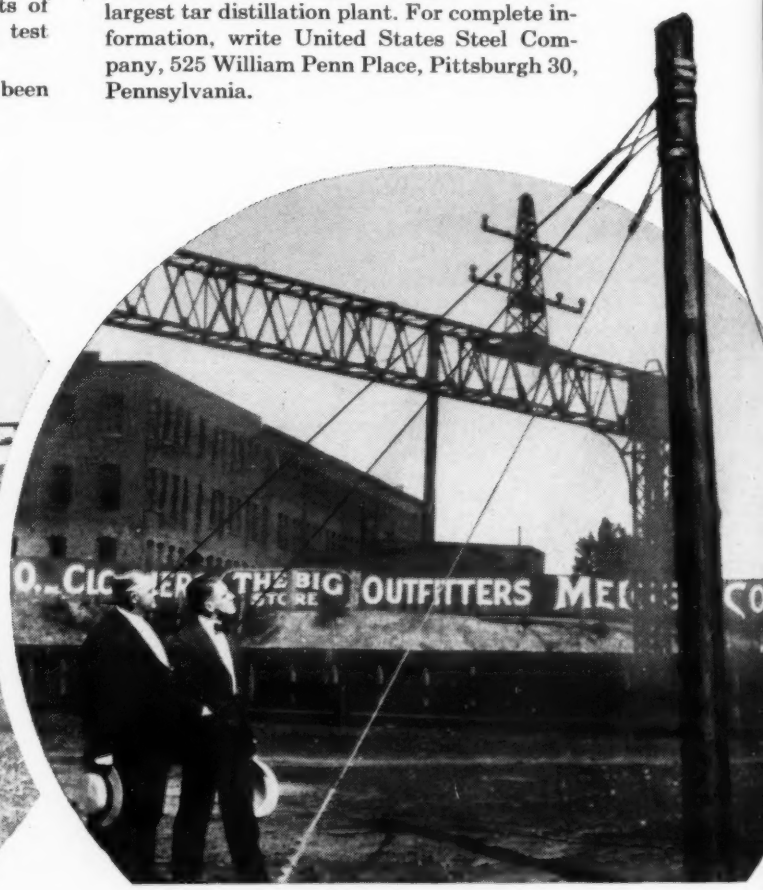
Records like these are your best guide when you choose a wood preservative. They are real *proof of performance*. They are the main reason the wood preserving industry used more than 200 million gallons of Creosote Oil preservatives in 1950.

Creosote Oil contains not one, but many compounds whose toxicity and permanence ward off attack by such wood destroyers as termites, fungi, dry rot and marine borers.

For a uniform product that gives you uniformly good performance, specify U·S·S Creosote Oil. It's the product of *continuous* processing in the world's largest tar distillation plant. For complete information, write United States Steel Company, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

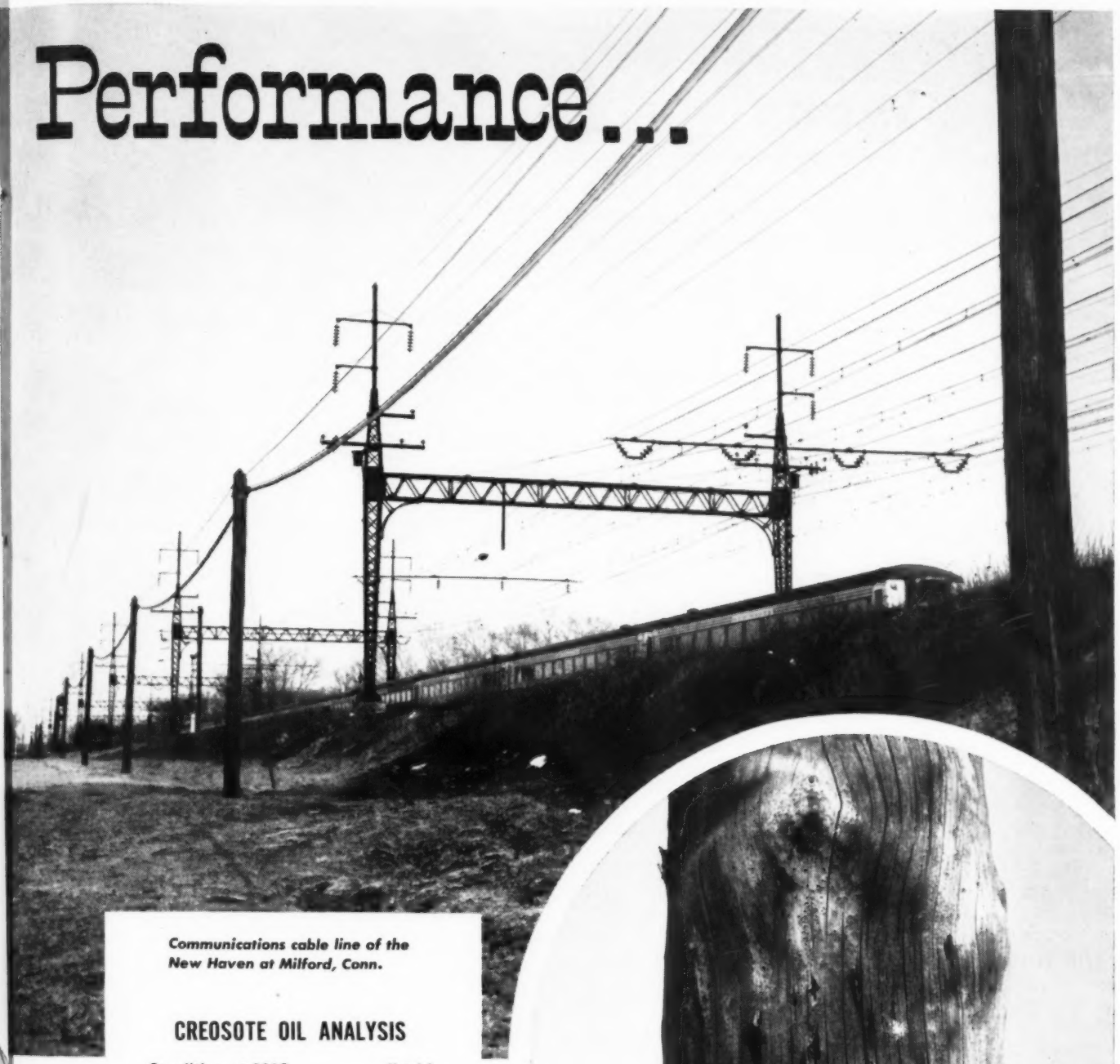


View of the line at West Haven, Conn.



1918 photo shows first of the 3029 poles on the line at West River.

Performance...



Communications cable line of the New Haven at Milford, Conn.

CREOSOTE OIL ANALYSIS

Condition at 38°C.	liquid
Spec. gravity at 38°C.	1.059
Dist. below 200	.842%
Dist. below 210	1.34%
Dist. below 235	14.20%
Residue above 355	25.75%
Water	2.16%
Tarry and suspended	.70%

Close-up of a pole near the East Woodmont Tower.

U·S·S CREOSOTE OIL

USS

UNITED STATES STEEL

FLASHES AND PLUGS

WHAT HAPPENED TO THE NICKEL? A well meaning lady from Guatemala knows now that a fire alarm box isn't a public telephone.

The lady put a nickel in a box in Washington, D. C., recently, pulled a lever and eight engine company trucks, two hook-and-ladder trucks, a rescue squad ambulance and a battalion chief responded to the call.

The firemen, by interpreting her Spanish and using some English—with gestures—directed her to a telephone in a drug store. No charge was placed against her.

• • •

THE MORE YOU GET, THE MORE YOU WANT. Fremont Power, feature writer on the Indianapolis *News*, has been nursing a suspicion that he couldn't find anybody in his city who would admit he was feeling well. So he picked up the telephone and started asking people how they felt. The result, says Power, "was the dog-gondest saddest bunch of stories you ever heard."

The queries turned up a universal story of colds, nervousness, virus infections, headaches and whatnot. And, observes Power, all this happens in the midst of life insurance company surveys that say American longevity reached a new high of 68½ years in 1951. He thinks we must be living longer and feeling worse.

• • •

IS THIS WONG? San Francisco's telephone book lists 57 Wong numbers.

Do you know people who either are or should be interested in TELEPHONY? Everyone interested in the telephone business should want to keep informed on industry developments.

Being a weekly, TELEPHONY can report things of interest to the telephone industry while it is still news. Read TELEPHONY currently and keep posted. If you do not have a subscription of your own, why not send in your order on the blank below; if you know of some one who should be reading TELEPHONY, why not pass the order blank on to him.

The yearly rate is only $3.50 for 52 issues; two-years, $5.50 for 104 copies, and three-years, $8.00 for 156 copies.

TELEPHONY Publishing Corp.
608 S. Dearborn St.
Chicago 5, Ill.

Enclosed find check(s) for _____ to cover subscription(s) to TELEPHONY for:

NAME_____
COMPANY_____
ADDRESS_____

NAME_____
COMPANY_____
ADDRESS_____

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

May 10, 1952

Contents

IN THE NATION'S CAPITAL 13
By Francis X. Welch

GOOD MAINTENANCE OF OUTSIDE PLANT ... 15
By J. A. McKinzie (Address at 1952 Nebraska Convention)

THE PLANT MAN'S NOTEBOOK 17
By Ray Blain

PLANT MAN'S QUIZ 18

OHIOANS WARNED TO STRENGTHEN PRIVATE ENTERPRISE IN INDUSTRY 19
By R. C. Reno

CABLE AS EXPRESSED IN EQUIVALENT LENGTH 26
By John A. Bracken

WICKARD ANNOUNCES EXPANSION OF REA TELEPHONE ORGANIZATION 28

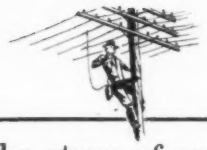
COURTS AND COMMISSIONS 32

H. D. FARGO Jr., *President & Advertising Manager*
R. C. RENO, *Vice President & Editor*
H. D. FARGO, *Vice President & Treasurer*
A. J. STULTS, *Secretary & Western Manager*
DAN FARGO, *Associate Editor*
HELEN CHRISON, *Associate Editor*
RAY BLAIN, *Technical Editor*
FRANCIS X. WELCH, *Washington Editor*
MAYME WORKMAN, *Traffic Editor*
VIVIAN RYDEN, *Circulation Manager*

Published by
TELEPHONY PUBLISHING CORP.

Vol. 142, No. 19. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 20 cents per copy (except special issues). Subscription $3.50 per year U. S. and Countries in U. S. Spanish Postal Zone; $4.50 Canada; $5.50 Other Countries. Entered as second class matter at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

Telephone WAbash 2-2435
608 S. Dearborn St., Chicago (5), Ill.
U. S. A.

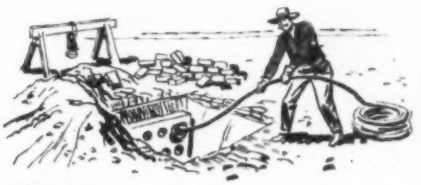


CHECKING THE LINE... via GraybaR

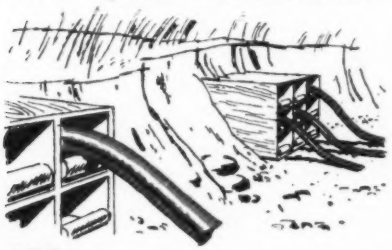
The story of underground installations—

1881 — **Pittsburgh, Pa.** 3 overhead-type Patterson cables were laid in a wooden box and covered with pitch. (Cables consisted of 50 cotton-insulated #26 copper wires in a paraffine-filled lead sheath.)

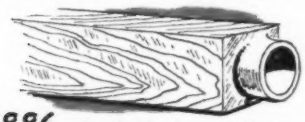
1882 — **Attleboro, Mass.** A locomotive-drawn plow was used to lay 5 miles of ¾" lead pipe containing the first *gutta-percha*-insulated cable (21 wires) — between Attleboro and West Mansfield.



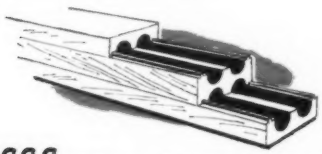
1882 — **Boston, Mass.** The first "drawing in" duct system was constructed of 18' wrought iron boiler tubes pretreated with gas tar and dead oil.



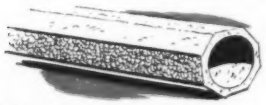
1884 — **Brooklyn, N. Y.** A creosoted wood "drawing in" system was installed. Built of 1½" lumber in 16' sections, it featured rollers to reduce cable-pulling friction.



1886 — Individual wood ducts—"Pump Logs"—were developed.



1888 — Macdonald conduit represented the ultimate in wooden duct systems.



1890 — The first vitrified clay conduit was used.

TODAY Since 1869, Graybar has supplied and kept abreast of new developments in telephone supplies. Today, you can order – from any of 108 Graybar offices – the most modern underground construction items available anywhere. Orangeburg fibre conduit, single- and multiple-duct clay conduit, mortar bandage material . . . duct rods, conduit rods, cable feeders . . . guard rails, barricades – all are products you know and respect.

20 tons of PUSH.

Graybar-distributed Greenlee hydraulic pipe pushers eliminate unnecessary tunneling and property damage. Easy-to-operate hydraulic unit can handle ¾" to 4" pipe . . . has 6 different operating speeds to match varying soil conditions.

REMEMBER, Graybar offers you convenient "one-order" service on *all* your telephone needs. In addition to construction tools and materials, we distribute telephones, wire, cable and apparatus. See for yourself — you'll save time and paper work by making your next order read *via Graybar*. 252-235

GRAYBAR ELECTRIC CO., INC.
Executive Offices:
Graybar Building, New York 17, N. Y.

Call Graybar first for... Everything in Telephone Supplies

IN OVER 100 PRINCIPAL CITIES

How "GOOD" will it las

LEIC

as...?

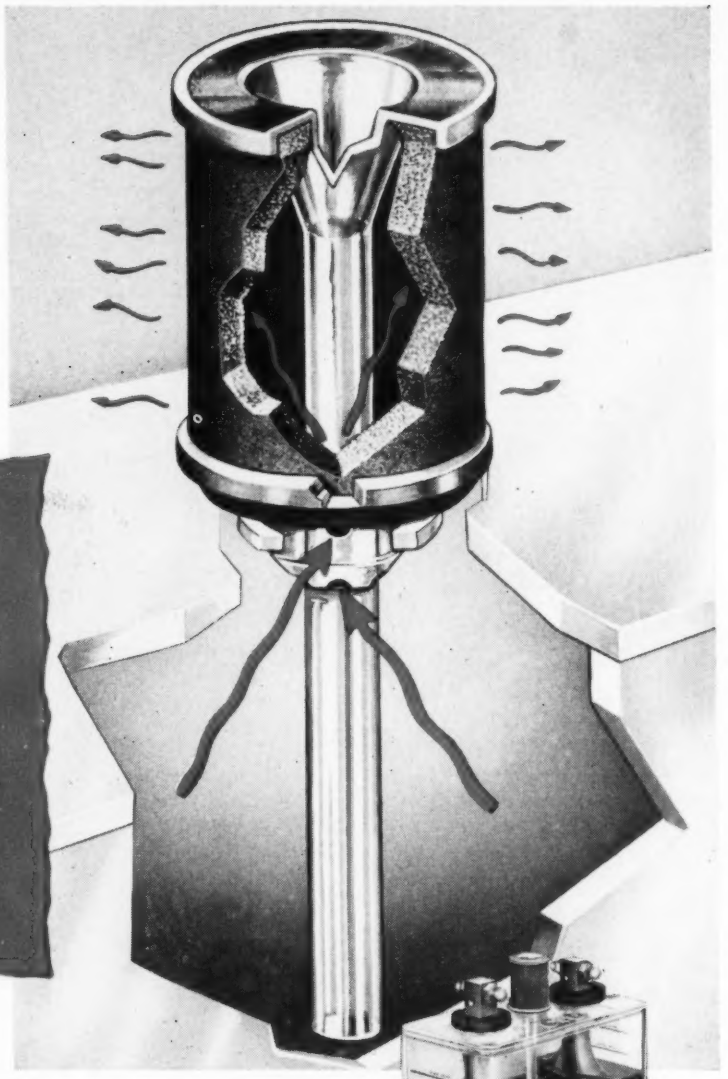
Unless you hit it with a hammer, a Leich telephone will last as long as anybody's. However, if you're in business to make money, how "good" it will last is more important.

We try to make Leich telephones so you will have fewer service calls than with any other kind. We've re-engineered them many times, re-designed and improved parts that have shown they might cause trouble.

Our Leich folks put them together carefully . . . and with pride. They believe they're building the finest telephones in the world. We believe you'll think so too when you try them. And you discover that lasting "good" is more profitable than lasting long. Leich Sales Corporation, 427 W. Randolph, Chicago 6, Illinois.

ICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

One of a series of
informative pieces about
C&D's PlastiCal...
the century's greatest
battery development

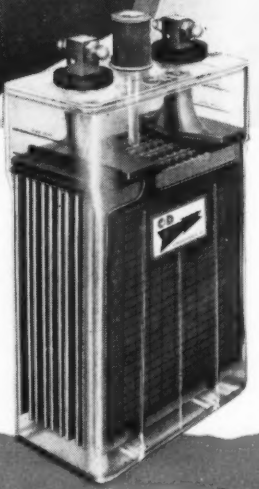


NO BATTERY EXPLOSIONS WHEN "SAFTEE-VENT" IS ON THE JOB!

If you know your telephone batteries, you know that combustible gases are produced when a battery is charged, and that the resulting explosion hazard is a serious problem—or *was!* C & D engineers eliminated this danger when they perfected the Saftee-Vent for the amazing PlastiCal telephone battery!

The design and function of this superior vent are very simple, but highly effective. There are only two passages through the vent. One is through the plastic funnel-shaped frame, which allows easy filling and testing of the battery. The tip of the funnel is beneath the level of the electrolyte, thereby closing this passage to the escape of gas or to the entrance of flame. The second passage is through the cylinder made of acid-resistant, sintered ceramic material. This cylinder prevents an accidental spark or flame from entering the cell. At the same time, it allows explosive gases to escape safely to the atmosphere by diffusing them, so that a combustible mixture is not possible. Thus, the explosion hazard is eliminated.

The exclusive, patented Saftee-Vent is just *one* of the advanced-design features of C & D's PlastiCal—the battery that lasts at least 40% longer, uses 1/5 as much current and water, and delivers high output all its life! Truly, PlastiCal is "*the century's greatest battery development.*"



Available in sizes from 10 A.H. to 660 A.H.

C&D

BATTERIES, INC.
OF CONSHOHOCKEN, PA.
(In the Philadelphia Area)

SALES AND SERVICE

Boston, New York, Philadelphia, Syracuse, Buffalo, Pittsburgh, Washington, Atlanta, Jacksonville, New Orleans, Cleveland, Detroit, Chicago, St. Louis, Minneapolis, Dallas, Denver, San Francisco, Los Angeles, Portland, Seattle

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH
WASHINGTON EDITOR

Judge Pine's decision in steel case may prove to be protection for public utilities against government seizure. NARUC engineers hear pleas for assistance to small companies. REA shifts emphasis to telephone loan program.

AS STATED in this department a couple of weeks ago, public utilities are very much in the role of interested spectators in the hectic scrambling, in and out of court, by the government, the steel industry, and the CIO United Steel Workers. It has been a little hard to follow from day to day with the various tiers of federal courts opening and closing doors after each other's decisions and orders.

But one central fact seems to emerge from the standpoint of public utility interest. That is the realization that U. S. District Court Judge David A. Pine has written an opinion which may one day prove as much protection for the telephone industry or other public utilities from seizure by the federal government—without statutory authority—as it was supposed to protect the steel companies.

Of course, that statement runs right into some rather curious language which Congress put into the recent law extending the President's 60-odd war powers, under which the government continues to operate the railroads, nominally at least. In that law, signed by President Truman last month, Congress said that it could not be used to justify government control or operation of the steel mills, or any other industries "*except public utilities.*" This made all the utility lawyers blink. There isn't any statutory authority in the war power for the government to operate any public utilities other than railroads! And if Congress meant just the railroads, why did it not say so, instead of using the broader term public utilities?

Well, on that narrow point, it seems to be understood that Congress *was* only referring to the railroads. Congress could not give the President any statutory authority to operate other utilities, by implication, through such a negative provision which actually limits the government's power. Assuming that that is true, public utilities find themselves today in the same position as the steel companies—thanks to Judge Pine's opinion. He said that the President has no "inherent" powers to seize any industry and that such an authority must exist, if it exists at all, in written law.

Of course, the appellate courts may whittle down the broad scope of Pine's opinion, which was practically a grand slam for the steel company attorneys. Assuming that this main tenet of Pine's decision survives on final appeal, however, it is hard to see how government seizure of a public utility could be any more legal than government seizure of the steel industry.

But that remains for the appellate courts to decide, just as it remains, at this writing, for the CIO steel workers to decide whether they are going to go back to work. After all, that is the most practical factor at this point.

The legal strategists of the Justice Department seemed to have slipped up in letting such a clean-cut test case of the government's claimed inherent powers to seize the struck industry be tested out in a non-utility industrial field, such as steel. The government would have been in a stronger position if the President had first attempted to seize one of the public utility industries. For some reason or another, American people seem less shocked about seizure of a public utility, and even the courts might have been disposed to find some basis for justifying government operations of a major utility business.

But the way it all happened, the shoe is on the other foot. In the light of the Pine decision—assuming it is substantially upheld — government attorneys would have a tough job indeed trying to justify seizure of a public utility industry. So the utilities, rather than the government, are in a stronger position because of Judge Pine's opinion.

And if all this speculation about possible seizure of the telephone industry or other public utilities seems farfetched, just remember that there were strikes going on in both the telephone and telegraph business when Truman was suddenly called upon to take action in the steel crisis. It could just as easily have been a telephone seizure test case as a steel seizure test case. Fortunately the blundering of the steel wage case at the Wage Stabilization Board level left the government attorneys little opportunity for subtle maneuvering.

More Business for NPA

Whether the steel ovens stay hot or cold will make quite a difference in the continuation of material controls for the telephone industry by the NPA Communications Equipment Division. The steel threat came on the heels of a rather gloomy picture painted by Defense Production Administrator Manly Fleischmann on Apr. 24 in a speech before the Armed Forces Communications Association convention in Philadelphia. Fleischmann held out little hope that either copper or nickel or any of the other alloy metals (cobalt, tungsten, etc.) would be in anything like a comfortable supply condition for the rest of this year and maybe next year.

There had been hopes, however, that with the armament picture improving considerably, the supply of steel might make it possible to ease off on NPA controls for materials, or at least to make the quarterly quotas more comfortable for the industry to operate. But if the steel ovens stay cold for as long as a month, we can kiss the chances of more liberal material controls goodbye for the rest of this year and maybe longer.

Steel—especially structural steel—is the major limiting factor in building construction of all kinds, including power plants and defense plants, which in turn are needed to step up produc-

tion for the rearmament program. If these plants fall behind schedule for the lack of steel, a lot of other things are going to be short and stay short because the government cannot afford to let strategic stockpiles get too low.

NARUC Engineers Meeting

The problem of the smaller telephone company came in for plenty of discussion at the annual convention of the state utility engineers held in Washington late last month, under the auspices of the National Association of Railroad & Utilities Commissioners. About 85 engineers from 38 state regulatory tribunals were on hand to hear an address of welcome by NARUC General Solicitor John P. Randolph.

William A. Roby of the Indiana commission, who will be president of the state commission engineers during the coming year, talked about the progress of mechanization of telephone central offices. He noted that Bell System companies had installed dial service in some states, almost to 100 per cent for local service, and on a general average 77 per cent. But at the same time, he observed that Independent telephone companies had been able to modernize only 40 per cent of their service automatically. Of course, the change over to dial is necessarily in less urgent demand on small Independent exchanges. But Engineer Roby contended that magneto equipment is obsolete for meeting modern standards of adequate telephone service.

During the discussion period, Engineer Roby commented about the inability of small companies to cope with the economic pressure of present-day operations. He asked whether the day of the successful operation of the very small Independent company has come to an end. He said that state commissioners and their staffs, as well as the Independent telephone industry, ought to help and encourage the tiny companies to integrate, and form themselves into combinations of at least 5,000 stations.

One other interesting suggestion made by the Indiana commission engineer was that small Independents should have a higher rate of return than larger telephone companies.

Vern W. Chase, engineer for North Carolina Public Utilities Commission, spoke about extended area coverage for rural telephone service. He pointed out that quite a few of the Southern Bell Telephone & Telegraph Co. exchanges in North Carolina now have extended area coverage, some without special charge for such area connection.

Chase admitted one drawback might

(Please turn to page 39)

REA Approves Loan Allocations Totaling $1,760,000

The Rural Electrification Administration approved telephone loan funds totaling $1,760,000 during the week of Apr. 21-26.

On Apr. 24 Brantley Telephone Co., Nahunta, Ga., was allocated $116,000. The loan funds will be used to expand and improve rural telephone service in Brantley and Charleton counties. The borrower will replace the present magneto switchboard with modern dial equipment, which serves 179 subscribers on 77 miles of line.

The company will build 49 miles of new line, add 214 new subscribers, and install unattended exchanges at Nahunta and Hoboken.

* * *

Crow Wing Cooperative Rural Telephone Co., Brainerd, Minn., on Apr. 24 received an allocation of $395,000. The loan funds will be used to expand rural telephone service in Crow Wing, Morrison and Cass counties.

As a nucleus, the new cooperative plans to acquire the telephone properties of the Leigh Richardson Rural Telephone Co. and seven service station companies now furnishing magneto service to 442 rural subscribers over 361 miles of line. The seven small companies include: Mission Township Fire Protection Telephone Co.; Clearwater & Nokay Lake Rural Telephone Co.; Modern Rural Telephone Companies; Brainerd & Southern Rural Telephone Co.; Freedham Rural Telephone Co.; Center Township Fire Protection Telephone Co., and Grave Lake Mutual Telephone Co.

With the REA loan funds, the borrower proposes to build 39 miles of new line, rebuild 316 miles of the acquired line, install dial central offices south, north and east of Brainerd, at Freedham and at Sullivan Lake. About 45 miles of the existing line will be retired. About 453 farm families will receive telephone service for the first time, and the present subscribers will have dial service, according to REA.

When the expansion and improvements made possible with this loan are completed, this system will be operating 355 miles of line furnishing dial telephone service to 895 rural subscribers.

* * *

Also on Apr. 24 Perham (Minn.) Telephone Co. was allocated $353,000. The funds will be used to improve and extend rural telephone service in Ottertail and Becker counties.

The company now provides common battery and magneto service to 757 subscribers over 185 miles of line. The REA loan will enable the borrower to build 102 miles of new line, rebuild 154 miles of existing line, convert the Perham central office to dial operation, and bring telephone service for the first time to 453 new subscribers, REA stated. When expansion made possible with this loan is completed, the system will be able to provide service to 1,192 subscribers over 269 miles of line.

* * *

On Apr. 25 Grand River Mutual Telephone Corp., Trenton, Mo., received an allocation of $896,000. The loan fund will be used to expand and improve rural telephone service in Grundy, Mercer, Harrison and Davies counties. The borrower plans to acquire certain telephone properties of the following organizations, now serving a total of 1,015 rural subscribers on 216 miles of line:

Four magneto exchanges owned by Galt Telephone System, Carrollton, Mo., located at Galt, Spickard, Dunpal, and Tindall, Mo. The first two exchanges are to be replaced by unattended dial exchanges, and the other two will be retired because of poor condition, according to REA.

One magneto exchange owned by Laredo Telephone Co.

Two magneto exchanges owned by Middle States Utilities Co., Cameron, located in Mercer and Brimson.

Unattended dial service buildings will be built in the five locations listed above, plus two at Mill Grove and Mt. Moriah, Mo. Loan funds also will finance construction of 854 miles of line to serve the 1,015 acquired subscribers and 958 new subscribers, of whom 750 have signed applications for service. There are approximately 3,200 establishments in the borrower's service area, REA stated.

Good Maintenance of

Outside Plant

By J. A. McKINZIE
General Plant Superintendent
Lincoln (Neb.) Telephone & Telegraph Co.

THE PRIMARY obligation of telephone companies is to furnish a good grade of service to their subscribers. One of the important factors in rendering good service is maintaining a high operating efficiency of the telephone plant through proper and adequate care of the equipment.

The outside portion of the telephone plant is subject to much wear and tear. It is exposed to the hazards of inclement weather, contacts with trees and power lines, construction activities, and road traffic. Exposure to the weather elements is the chief cause of outside plant deterioration. This deterioration is gradual, and eventually produces noise, poor transmission, and ringing difficulties that form the basis for subscribers' complaints of poor service.

When outside plant is allowed to deteriorate to the point where the subscribers' complaints become frequent, the plant usually is in such a bad condition as to require rebuilding. Rebuilding is a very expensive process at today's prices. It is even more expensive when the plant has been in service only a relatively short time. In the long run, it is more economical to keep the plant in good condition and thus maintain its operating efficiency at a satisfactory level, with comparatively few service complaints. It is surprising to note how long an old plant can be kept in service when it has been well maintained.

A Successful Maintenance Program

A regular maintenance program, that is systematically followed in all its phases, will accomplish much more than one that proceeds on a hit-or-miss basis. Such a program consists of two inter-related parts. One part provides for the training of plant workers to observe and correct outside plant installations in the course of their daily work.

If a worker does not have the equipment, or for some other reason cannot make the repairs when the condition is discovered, the matter should be reported to his supervisor to be handled later. Whenever a job is postponed for the reasons given, a written memorandum should be made of the defect reported, so that it will not be forgotten. It is the forgotten items that soon multiply and create conditions that cause trouble and unnecessary expense.

The other part of the program provides for the inspection of the entire outside plant at periodic intervals to detect and correct trouble while it is in the incipient stage, before it can interfere with service. Generally the inspection should be made every two years to coincide with the tree trimming schedule for maintaining clearance of open wires from trees.

When several exchanges or a large exchange are involved in the maintenance program, the work usually will have to be spread over the two-year cycle, so that the inspection can be handled by the minimum number of employes.

It is suggested that inspections start from the central office and include each cable lead in town, together with drops and open-wire extensions. When inspection of the town plant is completed, the next step is to follow each rural lead outside the town limits to the end and check the condition of the open-wire plant and the drops to farm residences. The inspection reports should show the exact location of the defects, material required, etc. Repair crews then can be directed to work in assigned areas and repair, or replace, defective plant items, as required, on an economical basis.

In some exchanges, and especially with small companies, it may be more economical to have the crew handle both the inspection and the repair work at the same time. The men should have sufficient experience and judgment to properly inspect the plant and not waste time and material in replacing plant items that are actually good for many more years of service. This is particularly true of obsolete items, which should be left in service as long as they are in good condition and are not causing trouble. These workers should have a truck equipped with all necessary tools and materials for the combined inspection and repair procedure. The success of this plan, as well as all others, is to see that employes are well trained in the work they are to perform. Money and time spent in the proper training of employes will show profitable results, especially in these times of high wages and material costs.

J. A. McKINZIE

Plant Maintenance Problems

It is not the intention of this paper to point out unsatisfactory plant conditions that should be looked for in the plant maintenance program. As telephone men, you know what the common faults are and what should be done to correct them.

We are primarily concerned with certain plant conditions that have been causing us trouble. We are taking care of them in our maintenance programs. Due to the increased use of rural power and the growing number of exchange conversions to dial operation, closer supervision of plant and a higher grade of maintenance has been found necessary.

Formerly, most of our small exchanges were of the magneto type. We could give reasonably good service in those exchanges, even with trees and shrubs growing into the wires on rural open-wire leads. It is true that we had occasional shorts and crosses from wires swinging together under the impact of branches swaying in the wind, but these were considered minor faults and did not cause great concern. There were a lot of hand connections made in the early days that we did not know about because they cre-

ated relatively little trouble. We were using test clamps, and, like the hand connections, they did not result in too much trouble. Transposition schemes were not considered necessary, unless cross-talk had to be eliminated in cross-arm leads, because of the number of circuits involved and their length.

When rural electrification entered this picture, we began to have trouble with noise induction on open-wire lines from power circuits paralleling these lines. Almost at the same time we began to step up our dial conversion program. Since the rural dial lines carry 48 volts direct current, it was very soon evident that trees and shrubs could not be allowed to come into contact with the wires, as the leakage interfered with the operation of the switching equipment. Line resistance also had to be kept low, and, for this reason, high resistance splices and connections could no longer be tolerated.

Aside from lack of transpositions, the same conditions that interfere with the operation of the dial switching equipment also create noise in lines paralleled by power circuits. We thus have to completely eliminate the causes of these troubles; namely, tree and brush contacts, hand connections, and test clamps.

Tree Clearance

To reduce the high labor costs of tree trimming, or removal by the usual cutting methods, consideration should be given to bulldozing right-of-ways, or killing trees and underbrush in these locations with chemical sprays. When permission cannot be obtained from property owners to eradicate plant growths on abutting right of ways, the poles can be raked or side-armed to carry the wires past the interfering trees. If an easement can be obtained, the poles are set on a private right-of-way free from interfering growths.

Trees and underbrush on right-of-ways can be eradicated in the most economical manner by having the county or state road authority and the property owners agree to share equally the clearance costs with the telephone company. It is generally possible to obtain the authority's cooperation, if the right of way is along a rural mail route or an important county road. The property owner's cooperation is more easily obtained, if he or his tenant is allowed to contribute his labor in the clearing project in full or partial payment of his share of the expense.

Chemical spraying to kill trees and underbrush can be accomplished by one of several methods; namely, foliage spraying, airplane spraying, and basal spraying, as follows:

Foliage spraying involves the spraying of the entire right-of-way, thoroughly wetting the foliage of trees and shrubs with a chemical solution. This solution is compounded by mixing standard herbicides with water in the proportions recommended by the manufacturers. This spraying method has several disadvantages. Sufficient pressure must be applied at the sprayer nozzle in order to throw the spray high enough to cover the foliage. This produces rather considerable spray drift, which may damage adjacent farm crops or valuable trees and wastes spraying material because of the wide coverage required. This type of spraying is limited to three or four months of the year, since the trees and brush must be in full leaf to be effectively treated.

When airplane spraying is employed, a low-flying airplane sprays the right-of-way much in the same manner as in dusting farm crops with insecticide. A commercial crop duster is employed for this work. This method has proved to be very satisfactory in eradicating dense hedge rows, and the cost is understood to be quite low.

In basal spraying, the first 12 inches around the plant stem above the ground are sprayed, rather than the entire plant and its foliage. This operation can be performed at any time of the year, weather permitting, since only the base of the stem needs to be sprayed, and the killing results are more satisfactory than with foliage spraying. . . .

After about a year following the spraying operation, the right-of-ways should be visited again to spray the few plants that may have resprouted. This occasional eradication work is handled by combinationmen provided with hand sprayers.

Chemical spraying appears to be a very successful method of eradicating unwanted trees and underbrush. It is expected that our line clearance costs will be substantially reduced over the years by this method.

Hand Connections—Test Clamps

Hand connections have proved to be a common source of trouble from the standpoint of creating noise and poor transmission in telephone lines. We now use compression sleeves exclusively in making all splices in open wire. Whenever a hand connection is found, either on visual inspection or through tests, it is removed and the line wires are respliced with compression sleeves. It is possible, however, to have trouble with a compression sleeve splice, if the wire ends are not thoroughly cleaned before splicing.

Test clamps cause noise and poor transmission, if not sufficiently tightened on the line wires at the time they are installed. They tend to corrode quite badly, and, if it is necessary to open a line for tests, they either are broken or are found to be too badly corroded for re-use. Tap compression sleeves have proved to be more satisfactory for connecting drop wires and spurs to open wire. If the wires are thoroughly cleaned before making the splice and the sleeve is properly crimped, first on the drop conductor (or spur wire) and then on the line wire, they seldom, if ever, cause trouble.

Line Transpositions

One of the causes of noise induction in open-wire lines may be lack of transpositions, and incorrect or wrong type of transpositions for the power line exposure. We make use of the standard N transposition scheme for our rural lines, but, if this type of transposition does not satisfactorily clear the noise, then we employ another and more elaborate scheme designed for severe exposure conditions and engineered for the job, with the cooperation of the power company.

Small companies having considerable trouble with noise induction can get help from a larger telephone company that has facilities for properly designing a transposition scheme worked out with the assistance of the power company.

In occasional cases, it may be found necessary to have the power organization investigate their equipment to locate the source of the noise, as their apparatus may be at fault.

Economies in Carrying Out Maintenance Programs

In maintaining rural lines, the use of power-driven tools has effected savings in labor costs. For tree trimming work, for example, where it is not possible to use the eradication methods previously described, portable electric chain saws can be used with excellent results.

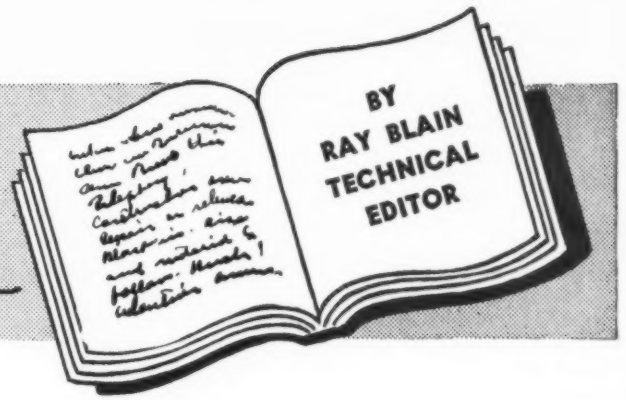
For several years we have used portable earth diggers and are convinced that they save time and money in setting poles. For incidental setting of poles, there is no advantage in using the earth digger, but when there are 10 or more poles to be set in a continuous row, the saving becomes evident.

To operate these power tools, we provide a 5 KW, 110-volt, dc gasoline-engine generator that furnishes adequate power for the earth digger motor, as well as for the chain saw. The motors are of the universal type, which operate equally well on ac or dc. The engine generator is transported in a small trailer. This trailer has room for carrying the earth digger equipment and bipod frame used for pulling the digger out of the hole after it is dug.

In areas where a portable engine-generator set is provided for emergency charging of the central office battery, we have been using the engine-genera-

(Please turn to page 40)

THE PLANT MAN'S *note book*



BY RAY BLAIN TECHNICAL EDITOR

WE RECENTLY received advice that an inspection of Western red cedar poles by a power company disclosed the fact that some of them had heart rot in their tops. Most of these poles were 11 to 18 years old. It was apparent that the 90-degree method of roofing poles did not prevent decay and that enough water had been retained in the untreated pole tops to promote the development of fungus growth.

The defective poles were treated by cutting off the top about one inch below the 90-degree roof and removing the decayed wood from the hole to expose sound wood.

The next operation was to sterilize the exposed cavity by pouring into it a pint or quart—or more—of the 5 per cent pentachlorophenol-petroleum oil solution such as is generally used for pole treatment.

Then a paste, prepared with fly ash and pentachlorophenol solution, was poured into the cavity. This paste was made sufficiently thick to set properly, but still thin enough to allow pouring. Usually, the checks in the pole are not wide enough to permit the paste to run out, providing it is not too thin.

Finally, the "filling" was protected from the elements by tacking a piece of slate-surfaced roofing paper to the top of the pole. Necessary precautions were taken to prevent contact between the paper and the paste.

The above, in our opinion, represents an interesting bit of "pole dentistry" which will prove most effective in those cases where it is required.

• • •

Recently, the Blain family was invited to visit friends who had not been able to have a telephone installed in their home in a new development near Washington, D. C.

In order for us to receive the invitation, it was necessary for the lady of the house to make a telephone call, a thing which proved to be quite a chore. It was a drive of nearly a quarter of a mile to the community telephone booth, then a wait until three ahead of her made their calls. In all, over an hour's time was required to complete a simple local call.

Surely we who enjoy the convenience of telephone service in our own homes would appreciate our telephones more if we had been forced to endure such trials.

• • •

Lt. Col. N. L. Tittle has been relieved as commanding officer of the Signal Corps Plant Engineering Agency and has been ordered to Naples, Italy, where he will be a Signal Corps member of the U. S. Army Element, Headquarters Allied Forces of Southern Europe.

The new commanding officer of the plant engineering agency is Col. Robert I. Dodge Jr., recently recalled to active duty from the AT&T company in New York City.

• • •

We hear rumors that a 400-pair cable using aluminum conductors is now available on an experimental basis. The conductors, we understand, are 19-gauge, but provide transmission equal to 22-gauge copper conductors.

The diameter of the cable is reported to be about the same as a standard cable, or about 2.60 inches.

• • •

It has been said: "Trouble is usually produced by those who produce nothing else."

• • •

Last year, Bell System companies requested 73,000 tons of copper for necessary construction programs, but received only 54,000. Then, for the first quarter of 1952, copper allocations were cut approximately 25 per cent. With a nation-wide telephone waiting list of 800,000 people, the situation is rapidly reaching the critical stage. If the demand for telephones and raw material shortages continue, more than a million held orders are forecast for the end of 1952.

In order to overcome the copper shortage, the search for substitutes is being intensified. The new "500" type high gain telephone makes it possible to reduce the amount of copper used in exchange cable conductors. It is estimated that approximately 3,000 tons of copper may be saved in this manner during 1952.

Copper-steel drop wire, used to extend lines from pole to house, reduces the amount of copper to a thin coating over a steel core.

• • •

A chemical treatment which, it is claimed, removes rust, tarnish and light oil and chemically prepares metals for paints and retards corrosion has been announced.

This compound destroys rust and rust-promoting surface contaminants, thereby cleaning the surface of steel, iron, aluminum, zinc and cadmium. It also forms a phosphate coating which acts as a base for organic finishes. It will also remove tarnish from copper and its alloys.

While this chemical contains a mild acid, it is said to be safe to use because it does not fume or emit toxic vapors.

• • •

National defense requires a lot of steel, but little things use steel also. Bobby pins take 6,000 tons, nails 750,000 tons and nuts and bolts more than one million tons annually.

• • •

Recently a manhole cover was blown 12 feet into the air by a gas explosion and crashed a street light during the heavy traffic hours in Washington, D. C.

• • •

Western Electric's Indianapolis plant is now manufacturing over 7 million lamp caps a year.

PLANT MAN'S QUIZ

Q. What type of patent anchors are recommended generally for the guying of open wire telephone lines?

A. In general, four different types of patent anchors are considered satisfactory. They are expanding plate anchors, cone type anchors, screw anchors, and swamp anchors. The expanding plate and cone type anchors generally prove satisfactory for use *except* under the following conditons:

(1) Wet or swampy soil.
(2) Soil that caves rapidly when boring holes.
(3) Locations where the drainage indicates that the location will be wet to the depth of the anchor plate at certain seasons of the year.

Cone type anchors are satisfactory for use where the proper size stone required to refill the hole can be made available. In some instances, this stone—or at least a part of it—can be obtained in digging the anchor hole.

The screw anchors are satisfactory for sandy or a mixture of sand and clay soils. Swamp anchors are similar to screw anchors, though much larger, and are set to a greater depth. They are satisfactory for use in wet or swampy soil.

• • •

Q. In the construction of underground telephone conduit systems, what clearances should be obtained between it and the underground structures of other utilities?

A. In the first place, never interfere with the property of other utility companies unless permission has first been obtained.

In the layout of trenches for the telephone conduit, avoid, insofar as possible, interference with all other underground structures. In general, the separation between foreign structures, telephone conduit and manholes should be as follows:

(1) Electric and power conduits, at least 3 inches of concrete or 12 inches of earth.
(2) Other foreign pipes, such as gas, water, oil mains, etc., at least 6 inches of earth.
(3) Where it is necessary to include other pipes crossing the trench in the conduit structure, surround the foreign pipes with broken stone, or split duct, so that they may be withdrawn without disturbing the conduit structure.
(4) Where practicable, conduit should cross under rather than over gas and water mains, particularly if the mains cross the trench diagonally. In all cases, cross water mains back of the bell joint.
(5) Provide sufficient space between the conduit structure and cast iron pipes for caulking the joints and for making repairs or connections to the pipes, if and when necessary.

• • •

Q. Please explain the action of wood preservatives on poles.

A. Various types of preservatives and methods of application have been used over a long period of time to prolong the life of timber by preventing the attack of fungi and insects. Through the improvement, development, and wider application of preservative treatments, additional species of timber have been made available for pole usage.

Suitable preservatives are toxic to wood-destroying fungi, and poison or repel wood-boring or wood-consuming insects. A practical requirement for wood preservation is that the fungicidal action will continue for some considerable period.

Relative permanence of the preservative action depends upon depth of penetration, stability, resistance to leaching and evaporation. To be fully effective, the treated wood should blanket the untreated wood completely in order to prevent the entry of decay organisms which would infect the vulnerable untreated wood.

• • •

Q. Please explain the ohmmeter and how it may be used.

A. The average ohmmeter is merely an adaptation of the known resistance voltmeter method. For convenience, both the battery and the meter are contained in the case, and the computation is eliminated by calibrating the scale in ohms instead of volts. Usually, this instrument is made up as a voltmeter which means that it may be used for the measurement of either resistance or voltage. When used in this form, the scale must be calibrated for voltage as well as resistance measurements and a switch must be provided to shift from one to the other. By the use of additional battery and multipliers of correct values, a multi-range meter can be provided.

One type of volt-ohmmeter employs a shunt-type circuit which eliminates the necessity of additional battery for resistance measurements up to about two megohms. A preliminary adjustment is generally necessary on this type of instrument. This is known as the zero adjustment and is made by short-circuiting the two leads of the instrument, and adjusting the zero adjuster until the indicator comes to rest at the zero mark on the resistance scale. This indicates that the resistance between the two terminals is zero, and when an unknown resistance is placed across the terminals, the meter will read its value directly on the scale.

The accuracy of measurement by the ohmmeter is limited to the accuracy of the meter and the tester's skill in reading correctly between the calibrated lines. The greatest accuracy is obtained when the measured resistance equals the internal resistance of the meter, a condition which results in a half-scale deflection on the meter. The use of the extreme ends of the scales should always be avoided.

V V

West Virginia Independents Organize State Association

Independent telephone company owners and managers in West Virginia met on Mar. 27 at the Waldo Hotel in Clarksburg and organized the West Virginia Independent Telephone Association.

Officers elected by the newly created association are Gerald H. Parks, Duncan Telephone Co., Thomas, president; Carl Ballentine, Short Line Telephone Co., Pine Grove, and Inland Telephone & Telegraph Co., Middlebourne, first vice president; James M. Baer, Pocahontas Telephone Co., Marlinton, second vice president, and J. W. Null, Wayne Telephone Co., secretary-treasurer.

Elected to serve as directors in addition to the foregoing officers are Byron Woods, Tygart Valley Telephone Co., at Mill Creek, and D. H. Hoover, Berea & Slab Telephone Co., Harrisville.

George C. Richert, secretary of the United States Independent Telephone Association, was the principal speaker at the meeting.

V V

"The experience of people in other lands who suddenly found themselves living in a totalitarian state discloses that the trend always started with people in local communities being unable or unwilling to take care of local situations. I hope that day never comes to America, as our life is too precious to be supplanted by either a socialistic, fascist, or communist form of government." — J. Edgar Hoover, Director, Federal Bureau of Investigation.

'Lurking Over Our Shoulder'

Ohioans Warned To Strengthen Private Enterprise In Industry

By R. C. RENO

IN ADDITION to the problems caused by increased demand for service, by material and manpower shortages, rising operating costs and inadequate revenues, the telephone industry has an additional problem — that of having "someone else lurking over our shoulder," Weldon Case, Hudson, O., president of Western Reserve Telephone Co., and president of the Ohio Independent Telephone Association, told the annual convention of that association, held Apr. 21, 22 and 23 at Columbus.

"In the event we do not do a good job, and if we do not take care of our service requirements, they are always willing and ever ready to step in and do the job for us. By doing the job for us, of course, the only thing they ask is for us to sacrifice our free enterprise system, give up our management powers, and turn all that over to the federal government—the telephone division of the REA," Case said.

With this threat in our business, every telephone company must see to it that it is operated under three basic principles—(1) Adequate rates; (2) sound financial structure, and (3) the will to serve the public, which it is bound to serve under the law, to the best of its ability, Case observed.

He pointed out that most telephone rates are "horribly inadequate" and that telephone companies have sacrificed their plants in order to bring service to the public at a low rate. They have given their plants away as a result of too low rates, he said.

The association president pointed to ways that Independent companies can raise capital for expansion and service improvement and stated: "I think that all of us think enough of the free enterprise in the United States that we want to do everything possible to see that our capital comes from private sources."

Regarding service, Case warned telephone companies that they must have the will to give good service and be ready to go out and serve the entire area they purport to cover, and offer service to anyone who wants it and is willing to pay for it.

In closing, Case said:

"I should like to say that I am proud as an individual to be associated with an industry with a heritage and history as rich as ours. The men and women who went before us in this industry were men of vision and principle, and it is the duty of the present generation to see that their visions become realities."

Rendering assistance to small telephone companies in improving their operating and financial status, and in filing rate applications and territorial boundary maps, constituted the main activity of the association's headquarters office during the past year, Secretary Lloyd C. Wright stated in his annual report to the convention. The association also held seven district meetings, he reported.

"Among the problems that will face the telephone industry in the future is one which deals with providing the best possible service to the armed forces and to manufacturing plants turning out the munitions of war," L. W. Hill, Tarboro, N. C., president of Carolina Telephone & Telegraph Co., and president of the United States Independent Telephone Association, told the convention.

While this is the industry's No. 1 duty, it must not lose sight of its obligation to see that the communications needs of the domestic economy of the country are also met as well as can be done, consistent with avail-

L. C. WRIGHT

R. N. COLE

C. E. WILLIAMS

ability of critical materials. It is a truism, he said, that without strong domestic economy the boys on the fighting front cannot be properly supported.

Hill, who recently served as chairman of the Communications Equipment Division of the National Production Authority, explained the NPA orders pertaining to the allotment of critical materials to the communications industries.

He also reviewed some of the activities of the USITA in behalf of the Independent telephone industry. Speaking of the future of the industry, Hill said in his closing remarks:

"If we can now weather some of the economic heresies and sophistries that have been knocking at our door as an aftermath of one war and in preparation for the nation's defense in case of a third world war; if we can hold up our end in the never-ceasing battle for the consumer's dollar; if we can succeed in keeping our credit good through adequate earnings so that plant rehabilitation and expansion need not be neglected; if we can continue to get the message through more efficiently, with less complaint, at rates which are reasonable to all concerned —if we can do these things—we shall again vindicate our claim to initiative and resourcefulness; and, furthermore we shall prove once more that ours is a splendid example of American free enterprise at its best."

An innovation at the Ohio convention, as far as state convention programs are concerned, was the appearance of the entire membership of the Ohio Public Utilities Commission on the program at the first session of the convention—Chairman R. L. Moulton, Ray O. Martin and R. A. Winter.

Chairman Moulton advised smaller telephone companies to have more faith in their customers.

He told the company heads that they should be more anxious to remedy their subscribers' complaints instead of "dodging" them. A friendlier, more considerate policy would pay off in dollar savings to the companies, the subscribers and the taxpayers, he said.

"Most people don't make complaints unreasonably. Most of your subscribers are good people who are busy and wouldn't bother with all the trouble of coming to the commission unless they had a good reason. So, when a person comes to you with a complaint, admit it. Try to do something about it instead of dodging the issue, as is so often done. Try to fix the man's trouble instead of claiming that it doesn't exist," the chairman advised.

He also urged executives of telephone companies to keep their employes more fully informed about their companies' expansion and repair plans so the information can be passed on to the public.

Groups photographed at the Ohio convention.

Commissioner Martin explained the commission's plan of expanding its engineering and accounting departments in order to facilitate investigations of service complaints; to see that telephone companies receive a fair rate of return, and to see that the operating districts served by telephone systems, through their service and the service of all other utilities in the districts, become economically strong.

Under the plan, the state would be divided into four districts, with a commission engineer assigned to each district to work with the utilities in the respective areas.

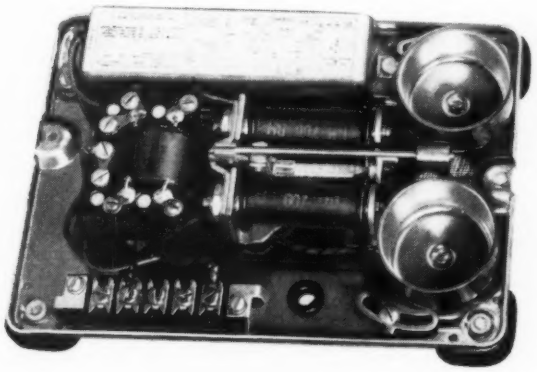
Commissioner Winter discussed the history of regulation of utilities, and

Beauty!

in North Telephones has a sales value when applied to your plant. It adds to the subscriber's pride of possession . . . assures better care . . . stimulates usage.

Utility!

is a matter of engineering based upon experience, as in the design of this North case, moulded of shock-resisting plastic to provide superior convenience in minimum space, plus ease of handling. The width being greater than its depth, protects the handset against knock-off or accidental "busying". Natural hand-curve and perfect balance give the handset a pleasing feel. High-fidelity transmitter and receiver capsules provide true, clear tone . . . are as easily replaceable as a light bulb.



Economy!

from the standpoint of the operating company stems from the high ratio of North Telephone performance to low maintenance . . . plus efficient engineering of the base plate on which terminals, coil, condenser and ringer are compactly nested; interchangeable in desk sets, wall sets, or ringer boxes. Only one base to stock for all types of installation!

YOU GET THE MOST OF EACH IN NORTH TELEPHONES

Did you receive your copy of the North Telephone catalog?

THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of ***ALL RELAY*** *Systems of Automatic Switching*

601 South Market Street, Galion, Ohio, U.S.A.

pointed out that, with utilities being natural monopolies, the purpose of a regulatory body is to substitute for the check that competition would normally exercise.

"We believe utility enterprises are entitled to a reasonable rate of return and we believe it is the commission's duty as defined by law to see that the company receives such return. But we also believe that such reasonable rate of return implies that the company render a quality of service that is adequate and reasonable within the ability of that company to serve," Commissioner Winter stated.

The entire second day of the convention was given over to plant and traffic conferences. The plant meeting was in charge of Peter Galanka, Lorain Telephone Co., and the traffic conference was presided over by W. B. Crays, Portsmouth, Ohio Consolidated Telephone Co.

Those taking part in the plant conference, with the subjects they discussed, were:

J. I. Hunt, Middlefield, Home Telephone Co.—"Construction and Splicing of Plastic Cable."

Walter Lee, Chicago, Automatic Electric Sales Corp.—"CMP Regulations."

Floyd L. Green, Canton, Ohio Power Co.—"Noisy Telephone Lines from a Power Man's Point of View."

Sam Kraus, Covington, West Ohio Telephone Co.—"Water Over the Dam."

E. R. Arnold, Fairview, Home Telephone Co.—"Use of Trouble Records."

J. H. Ludden, Columbus, Ohio Bell Telephone Co.—"Long Span Wire Construction."

Those taking part in the traffic conference, and their subjects, were:

Phyllis Ziegler, Marion, Ohio Associated Telephone Co.—"Tributary Toll Operating Practices."

Madeline Marvin, Mansfield Telephone Co.—"Tone of Service As It Affects Public Relations."

George R. Canning, Avon Lake, O., Federal Civil Defense Administration—"Civilian Defense As It Affects Telephone Companies."

The convention heard reports of the activities of the plant equipment committee by Chairman Peter Galanka, Lorain Telephone Co.; public relations committee, by Chairman R. R. Waltz, Delta Home Telephone Co.; traffic committee, by Chairman W. B. Crays, Portsmouth, Ohio Consolidated Telephone Co., and small company committee, by Weldon W. Case, Hudson, Western Reserve Telephone Co.

"The Problems of the Manufacturer" was discussed by W. A. McCracken, Chicago, works manager, Kellogg Switchboard & Supply Co.

Ax the Tax

The federal personal income tax was adopted in 1913, with rates ranging from 1 to 7 per cent. Today rates range from 22.2 to 92 per cent. The corporation tax, when adopted in 1909, amounted to 1 per cent. Today it averages 60 per cent of corporations' earning.

The total tax burden—direct and hidden; federal, state and local—now is approaching 35 per cent for the average American. Those in the $2,000 to $3,000 income group pay almost 30 per cent of their incomes. These facts were reported by the Chamber of Commerce of the United States in recommending that proposed foreign aid spending be cut from 10.5 billion dollars to 5 billion dollars next fiscal year.

"While the manufacturers have delivered vast amounts of equipment and supplies since World War II, they have never been able to get into a position where they have had shelf stock for immediate delivery such as was their position in the late 30's. They immediately set about the task of meeting this situation, but had by no means satisfied their customers when NPA (National Production Authority) issued its first orders restricting their operations," McCracken said.

The manufacturers, he said, are now in a period with abnormal demands upon all of their manufacturing facilities. They are saddled with the problem of providing the telephone equipment needs to maintain the so-called normal economy, and at the same time to provide millions of dollars worth of specialized equipment for the Signal Corps, Air Force, Navy and other branches of the armed services. "It is more important than ever at this time that we plan well ahead so as to meet all the demands upon us," McCracken stated.

Among the problems faced by the manufacturers, he stated, are the critical shortages in the skilled trades, such as machinists, tool makers, automatic screw set-up men, and other skilled mechanical and electrical tradesmen.

"With delivery of raw materials still a very uncertain factor in our over-all planning, it is extremely difficult for the manufacturers to anticipate their requirements and place orders sufficiently in advance to eliminate a shortage of material in their manufacturing plants and a loss of time in their production lines, which result in extended deliveries of equipment to operating companies," McCracken stated.

However, the NPA has done an excellent job in helping the manufacturers solve their problems and in procuring for the telephone industry an equitable share of all available critical and controlled materials by allocation and distribution by the Munitions Planning Board.

"Vast amounts of benefits can be derived by close cooperation and planning between all divisions of the Independent telephone industry, particularly between the manufacturer and the operating company. We in the manufacturing field wish to afford to you who are in the operating business the best possible service in providing you with your equipment for years to come," McCracken concluded.

"The Telephone Company and Its Banker" was the subject of an address by Thomas W. McMahon Jr., New York City, assistant cashier of the Chase National Bank, which offers Independent companies short-term construction loans to finance conversion and expansion programs.

In his opening remarks, he pointed out that the characteristics of the utility industry — high ratio of plant investment to total revenues and regulation of earnings—are such that utility companies must obtain funds from outside sources for any expansion beyond very nominal growth. Further, because of this same regulation of earnings, the ultimate financing must be of either a permanent or long term character. It is manifest that the same income dollar cannot pay for past expansion and, at the same time, provide for today's rapid growth, he said. He continued:

"While loans to utilities are for capital purposes, and a commercial bank because of its very nature must be mindful of liquidity, the two objectives are not incompatible. Financing a construction program with commercial bank money is an intermediate step between financing capital additions from earnings and from the sale of permanent securities, and it is based upon the assumption that bonds and preferred or common stock may be sold more advantageously on demonstrated than on estimated results.

"In connection with its loans to utility companies, Chase has used what is known as the standby construction credit. Under such a credit, the borrowing company may, by contract, avail itself of monies up to a stipulated amount during a construction period and is permitted a stated time thereafter in which to demonstrate the anticipated earnings resulting from the construction before securing permanent financing.

"For a commercial bank to consider favorably a loan of this type, it must be for a sound purpose, such as im-

(Please turn to page 42)

Pays For Itself Many Times Over In Just One Power Failure

HOMELITE

STANDBY POWER

A storm comes. Power fails. You're out of service. You're out of income. You're losing money every minute your lines are out of order.

Only then, you realize how much a Homelite Carryable Gasoline Engine Driven Generator can mean to you. Light enough for one man to carry, a Homelite can be set up any place . . . in your main exchange or relay stations . . . and it will provide enough power to keep your service functioning.

Not merely to protect any loss of income, a Homelite serves as a real safeguard to your service, particularly emergency service. And, for the low cost of Homelite Standby Power, no company can afford to be without its protection.

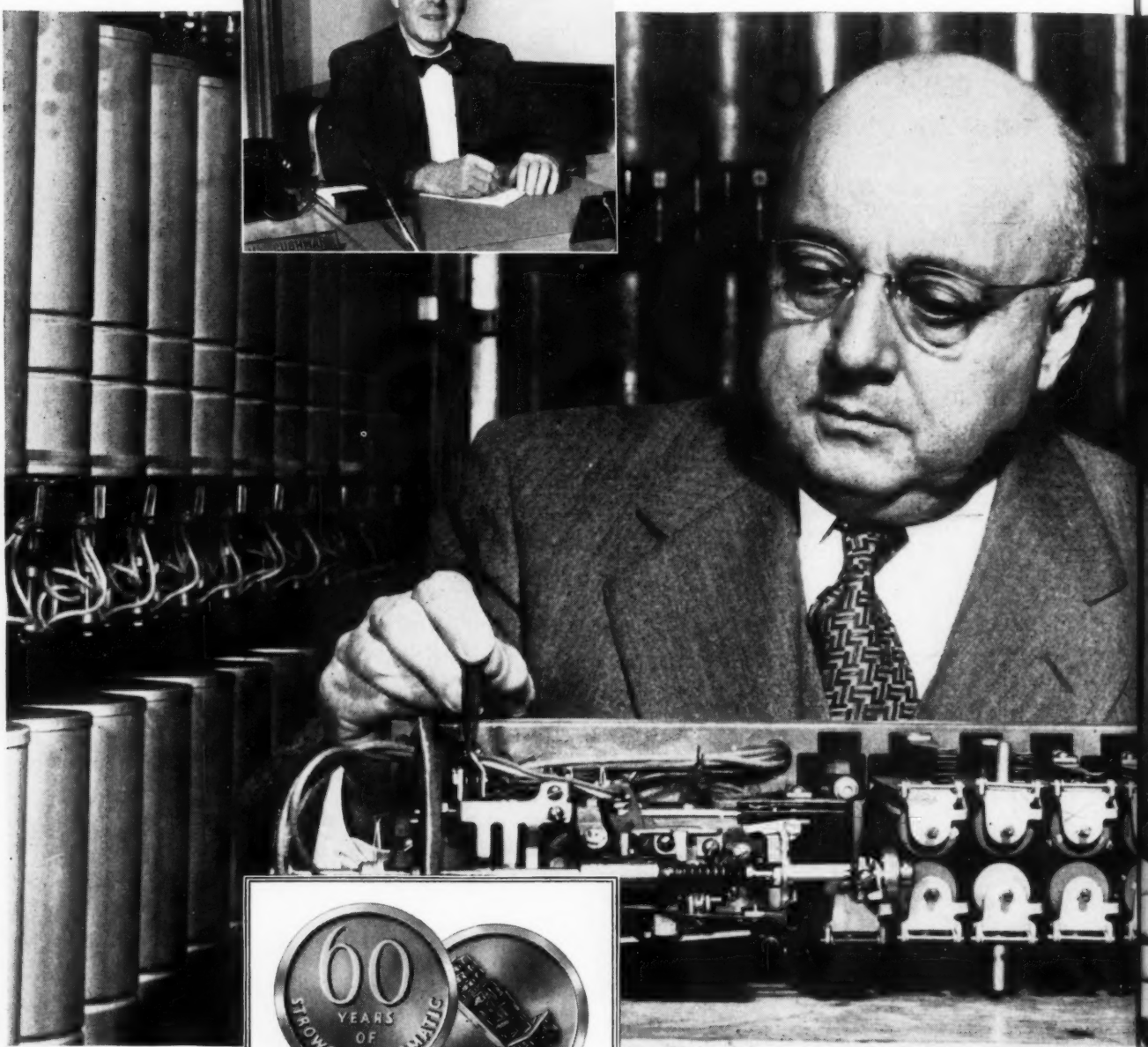
Write for complete information.

Manufacturers of Homelite
Carryable Pumps • Generators
Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE
CORPORATION
1805 RIVERDALE AVENUE • PORT CHESTER, N. Y.

Strowger Automatic proves dependability



STROWGER
AUTOMATIC
World Famous for Dependability

1st photo, upper left: Central office building of the We
Company.

2nd photo, upper left: E. L. Cushman, President of the W
Company.

Large photo, above: Stanley Livingston, wire chief, ch
Westerly exchange. Behind him
new equipment are shown at the

tyat Westerly — 49 Years!

he Wutomatic Telephone

the Wutomatic Telephone

ief, chStrowger switch in the
him switch bay. Both old and
t the

At Westerly, R. I., Strowger Automatic
has provided longer continuous automatic service
than any other exchange in the United States!
Here—in the 49-year success of this 2,800-line exchange—
you have conclusive *proof* of Strowger Automatic dependability.

What made such outstanding service possible?
Automatic Electric "know-how"
in research, design, and production!
Our 60-year development of the Strowger switch,
our thousands of tests,
our constant search for new materials, improved designs and processes,
have given us a fund of skills and knowledge
unequalled by any other manufacturer of automatic equipment.
We use these skills
to build ultra-modern Strowger Automatic equipment around this switch
—and to build it so well that it lasts a lifetime.
We draw on this knowledge
to give you *tested* solutions for your problems.

Write us today about your needs.
We'll be glad to help you!

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Cable As Expressed In Equivalent Length

By JOHN A. BRACKEN

EDITOR'S NOTE: This article is being published as a sequel to the Temperature Constant Tables published in the following issues of TELEPHONY: Oct. 13, p. 34; Oct. 20, p. 36; Nov. 17, p. 18; Nov. 24, p. 32; Dec. 8, p. 52; Dec. 15, p. 28; Dec. 29, p. 30; Jan. 26, p. 19; Feb. 2, p. 19; Mar. 15, p. 26; Apr. 5, p. 30, and Apr. 12, p. 21.

THE LAYOUT of a telephone exchange cable system is often such that a combination of different sizes of cable conductors are connected in series. Under certain conditions of locating a fault in one of the cables comprising a combination of different size conductors, it is more convenient to convert all the cables to an equivalent length of the faulty conductor, and then calculate the distance to the fault as if all conductors were the same size.

This may be accomplished by means of the chart shown in *Fig. 1.* Under the chart heading "Actual Size A. W. G. Copper Wire," from top down are listed various sizes of wire from No. 12 to 28 inclusive.

Directly below the heading "Size A. W. G. Copper Wire to be Converted to an Equivalent Length of the Actual Size," the various size wires from No. 12(A) to No. 28(A) are listed. In the extreme right hand column is the term "Conversion Factor," which alludes to the numbers in the spaces to the left.

To use the chart: (1) Obtain from exchange cable records the actual length and size of the conductors in the different cables involved.

(2) Multiply the length of each cable by the appropriate conversion factor given in the chart.

(3) Add the results of the computations together. This will equal the equivalent length of the faulty conductor. Example: Assume that it is desired to convert 8,473 feet of No. 19, 7,360 feet of No. 22 and 5,287 feet of No. 24 A. W. G. telephone cable to an equivalent length of No. 19.

(1) On the chart under heading "Actual Size A. W. G. Copper Wire" locate No. 19.

(2) From this point and to the right in the space below the wire size number 19(A) will be found the conversion factor 1.00.

(3) In the same manner locate on the chart under "Actual Size of Wire" the number 22 and in the space below the size number 19(A) will be found the conversion factor 2.00.

(4) Locate the number 24 and in the respective space below the number 19(A) is the conversion factor 3.00.

Then:

1.00×8,473= 8,473 actual feet of No. 19.
2.00×7,360=14,720 equiv. feet No. 19.
3.00×5,287=15,861 equiv. feet No. 19

Total equivalent length of No. 19 equals 39,054 feet.

Suppose the measurement of a case of cable trouble from the central office (C.O.) out to the fault "F" *(Fig. 2)* equals 263.5 ohms and the temperature is 60 degrees Fahrenheit. From the temperature constant table for the No. 19 cable (TELEPHONY, Dec. 29, p. 30), the feet per ohm value at 60°F. is 126.57. Multiply this by the measured resistance, or 263.5 times 126.57 equals 33,356 feet. Add together the equivalent feet of No. 22 and 24 cables, or 14,720 plus 15,861 equals 30,581 feet. Subtract this from the test value: 33,356 minus 30,581 equals 2,775 feet. This equals the distance from point "A" to the fault at point "F" as shown in *Fig. 2.*

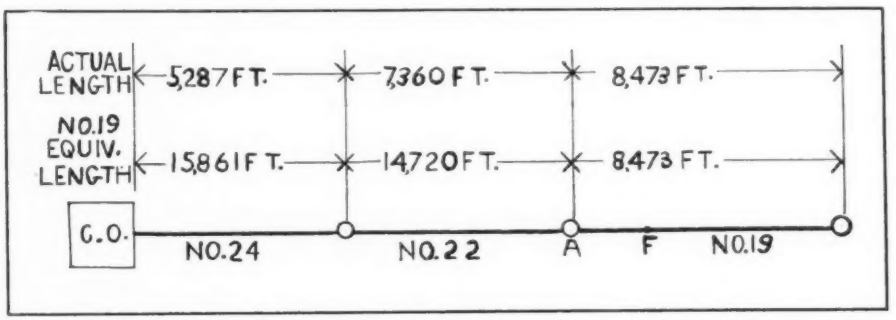


Fig. 2

V V

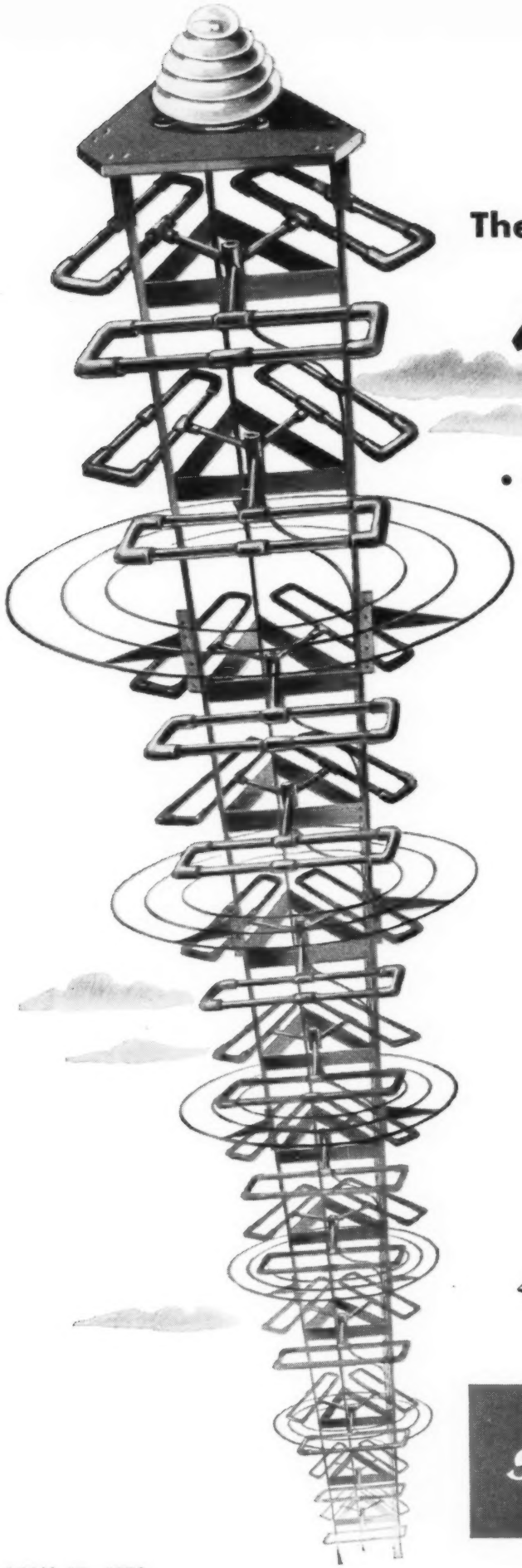
>> Someone has said that when success turns a man's head, it always leaves him looking in the wrong direction.

SIZE A. W. G. COPPER WIRE TO BE CONVERTED TO AN EQUIVALENT LENGTH OF THE ACTUAL SIZE

Actual Size A.W.G. Copper Wire	12(A)	13(A)	14(A)	16(A)	17(A)	18(A)	19(A)	20(A)	22(A)	24(A)	26(A)	28(A)
12	1.00	0.795	0.629	0.396	0.314	0.249	0.197	0.156	0.098	0.062	0.039	0.025
13	1.26	1.00	0.790	0.499	0.395	0.313	0.249	0.197	0.123	0.078	0.049	0.031
14	1.59	1.26	1.00	0.629	0.499	0.395	0.314	0.248	0.156	0.098	0.052	0.039
16	2.52	2.00	1.90	1.00	0.793	0.629	0.499	0.395	0.249	0.156	0.098	0.062
17	3.19	2.54	2.00	1.26	1.00	0.793	0.629	0.498	0.314	0.197	0.124	0.078
18	4.02	3.19	2.53	1.59	1.26	1.00	0.793	0.628	0.396	0.248	0.156	0.099
19	5.07	4.02	3.19	2.00	1.59	1.26	1.00	0.792	0.498	0.313	0.197	0.126
20	6.40	5.07	4.00	2.50	2.00	1.59	1.26	1.00	0.629	0.390	0.249	0.157
22	10.1	8.00	6.40	4.00	3.19	2.53	2.00	1.59	1.00	0.630	0.395	0.249
24	16.0	12.8	10.0	6.40	5.00	4.00	3.00	2.50	1.60	1.00	0.620	0.395
26	25.6	20.0	16.0	10.0	8.00	6.30	5.00	4.00	2.50	1.60	1.00	0.620
28	41.0	32.5	25.7	16.1	12.7	10.1	8.00	6.00	4.00	2.50	1.60	1.00

CONVERSION FACTOR

Fig. 1



The best in TV comes to LATIN AMERICA

...and ISE brings it!

Today's finest television . . . complete stations for Guadalajara and Monterrey, Mexico . . . Sao Paulo, Brazil . . . Buenos Aires, Argentina . . . is being brought to Latin America by International Standard Electric Corporation, an associate of International Telephone and Telegraph Corporation. Whatever Latin America needs for modern telecommunications . . . television, automatic telephone systems, PTM microwave, carrier, railway radio, marine radio, air navigation aids . . . ISE can provide it.

TV Transmitters and Studio Equipment
Microwave Links and Relays
Selenium Rectifiers
Capehart Home Receivers

ISE
An IT&T Associate

International Standard Electric Corporation
67 Broad Street, New York 4, N. Y., U.S.A.

Wickard Announces Expansion of REA Telephone Organization

CLAUDE R. WICKARD, administrator of the Rural Electrification Administration, on Apr. 28 issued the following statement concerning a reorganization of REA affecting the telephone loan program:

"The Rural Electrification Administration is being reorganized in order to meet the needs of the rapidly expanding telephone program and to take better advantage of the increasing experience and stability that electric borrowers have acquired. The reorganization will take effect July 1.

"The principal changes are:

"(1) The telephone staff will be increased by 50 per cent as rapidly as the people can be shifted from the electric program and trained.

"(2) Five Electric Distribution Area Offices will be set up to provide a single organization to work with distribution borrowers in developing plans and in providing whatever technical REA assistance is needed.

RICHARD A. DELL
Chief
Telephone Loans Division

"Two new telephone divisions are being set up. They are a Telephone Loans Division and a Telephone Engineering Division. The Telephone Loans Division will be in charge of loan study and development work and management assistance for the telephone program, and will make recommendations to the administrator on telephone loan applications. The Telephone Engineering Division will be responsible for such activities as preloan engineering, construction engineering and technical operations and maintenance advisory service to borrowers.

"By transferring people to these telephone divisions from the electric program, we will be in a position to give better service to telephone borrowers.

"Previously the telephone program has been administered by organizational units which also had responsibilities for the electric program.

"While making this transfer, we are streamlining the organization for handling the electric program in order to give the most effective assistance to the rural electric borrowers. We believe this consolidation of our field activities will enable us to make more efficient use of personnel and travel funds. Although we will not be able to give our borrowers as much assistance in some phases of the work, we will be in a better position than we have been to give them more effective assistance on problems of over-all management and service.

"The five new Electric Distribution Area Offices, which will be headquartered in Washington, will have complete responsibility for relationships with electric distribution borrowers and locker plant borrowers in their respective areas.

"Each area office will have general representatives in the field who will be responsible for advising with borrowers on their development of over-all plans for giving satisfactory service. The Office will also direct and integrate whatever REA assistance is desirable in carrying out such plans. One of the immediate jobs will be to work with borrowers in advancing the Electric Farming Campaign which holds such a big potential for farmers, the co-ops and the nation.

"In the power generation and transmission field, the Power Division will continue to function very much as it has in the past. Work in connection with federated power-type borrowers having generation and transmission facilities and generation plants of distribution borrowers is the responsibility of the Power Division.

"A new responsibility for the Power Division will be the handling of loan applications from power-type borrowers. Recommendations for action by the administrator on these loan applications will be made by the Power Division.

K. W. BENCKERT
Acting Chief
Telephone Engineering Division

"The following old line divisions are being abolished: Applications and Loans Division; Accounting and Auditing Division; Management Division, and Engineering Division.

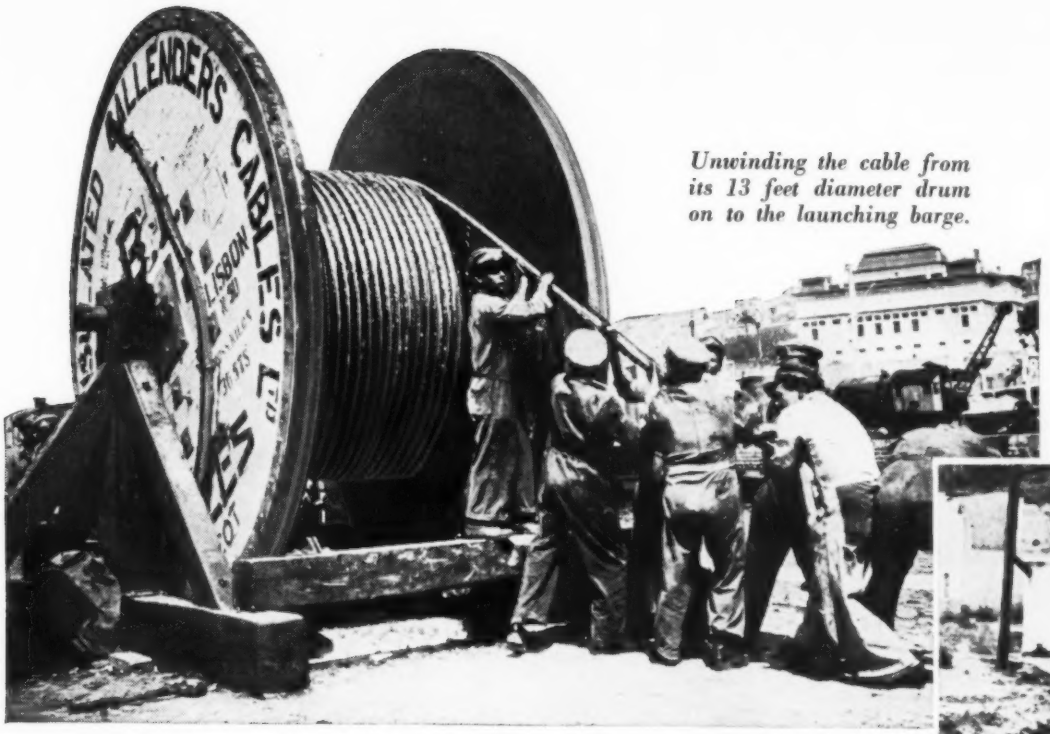
"We are also taking steps to establish more effective REA staff work. Related staff work has been grouped so as to make for better coordination. Four staff divisions remain essentially unchanged. These are: Technical Standards, Personnel, Information Services, and Administrative Services. Three new staff divisions have been set up—a Controller's Division, an Engineering Division and an Operations Division.

"These new divisions, along with the existing staff divisions, will service the five area offices, the Power Division and the *two telephone divisions*. They will be responsible in their respective fields for the development of program policies, plans and procedures, for technical advice to the line divisions and for field assistance when requested and available.

"The work of the new staff divisions is to be briefly as follows:

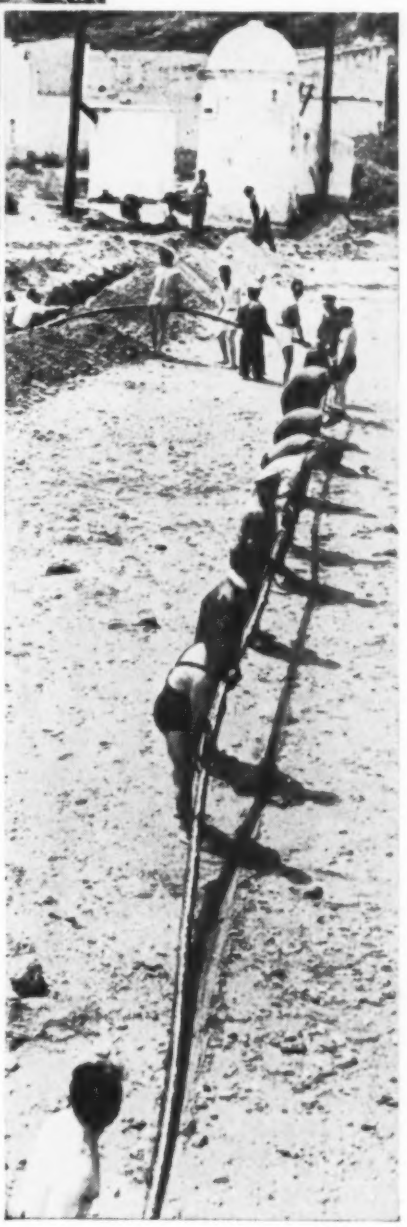
"The Controller's Division is to be responsible for all auditing functions, including both borrower audits and the internal audit of REA activities. It will be responsible for the accounts and records of all government funds, and for billing and collection, and it will maintain the program statistics.

"The new Engineering Division's responsibilities, in addition to those dealing with REA engineering policies and procedures, will cover such staff activities as technical operations and main-



Unwinding the cable from its 13 feet diameter drum on to the launching barge.

Pulling in the cable at the Terminal end.



Portugal's largest single-length telephone cable

A new submarine trunk-type telephone cable has been laid across the River Tagus at Lisbon by The Anglo-Portuguese Telephone Company Ltd. Specially manufactured by BICC, this 3-inch diameter cable is 2,406 yards long and is composed of 104 pairs of 20 lb conductors. It is the largest single-length cable ever supplied to Portugal and its installation has almost doubled the number of telephone toll circuits previously available across the Tagus.

This is a typical example of work constantly being undertaken by BICC to meet customers' specific requirements.

B.I. Callender's

TELEPHONE CABLES

BRITISH INSULATED CALLENDER'S CABLES LIMITED
NORFOLK HOUSE, NORFOLK STREET, LONDON, W.C.2, ENGLAND

Branches and Agents throughout the World

E. FRANK RENSHAW
Assistant Chief
Telephone Loans Division

HOBURG B. LEE
Assistant Chief
Telephone Engineering Division

tenance, safety and job training, and pole inspection.

"The Operations Division will be chiefly concerned with providing management consultant and specialist services in such fields as business management, co-op functioning, power use, retail rates, insurance, acquisitions and locker plant management.

"A list of the various organization units with the officers designated to be in charge, effective July, is as follows:

Line Divisions

"*Telephone Loans Division* — Richard A. Dell, chief, and Edgar F. Renshaw, assistant chief.

"*Telephone Engineering Division* — K. W. Benckert, acting chief, and Hoburg B. Lee, assistant chief.

"*Power Division* — J. B. McCurley, chief, and John M. Duncan and Milton A. Chase, assistant chiefs.

"*Northeast Electric Distribution Area Office* (Regions 1 & 4)—John W. Asher, Jr., director, and Ralph J. Foreman, acting assistant director. Includes: Connecticut, Delaware, Indiana, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia.

"*Southeast Electric Distribution Area Office* (Regions 2 & 3)—William H. Callaway, acting director, and David Askegaard, assistant director. Includes: Alabama, Florida, Georgia, Kentucky, Mississippi, South Carolina, Tennessee, Puerto Rico, Virgin Islands.

"*North Central Electric Distribution Area Office* (Regions 5 & 6)—Kermit O. Overby, director, and George A. Lewis, assistant director. Includes: Illinois, Iowa, Minnesota, North Dakota, South Dakota, Wisconsin.

"*Southwest Electric Distribution Office* (Regions 8 & 10)—John W. Scott, director, and Hubert Wales, assistant director. Includes: Arizona (except Arizona 16 Mohave—Littlefield Electric Cooperative, Inc.), Arkansas, Louisiana, Missouri, New Mexico, Oklahoma, Texas.

Western Electric Distribution Area Office (Regions 7 & 9) — Roy G. Zook, acting director, and E. Guy Keffer, assistant director. Includes: California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, Oregon, Utah, Washington, Wyoming, Alaska, Hawaii and Pacific Possessions, and Arizona 16 Mohave—Littlefield Electric Cooperative, Inc.

Technical and Administrative Staff Divisions

"*Engineering* — J. K. O'Shaughnessy, chief, and W. M. Edmunds and R. W. Lynn, assistant chiefs.

"*Operations*—E. E. Karns, chief, and Edward F. Wilson and George E. Dillon, assistant chiefs.

"*Controller*—Leslie Surginer, chief, and Kenneth L. Smith, Robert A. Stein and Wells E. Ludlow, assistant chiefs.

"*Technical Standards*—J. E. O'Brien, chief.

"*Personnel*—Henry C. Starns, chief.

"*Information Services*—Robert H. Ingram, chief.

"*Administrative Services*—William T. Templeman, chief."

V V

» New jobs for America's growing population are created by expansion of industrial capacity. Approximately 25 billion dollars a year are spent for new plant and equipment. Some of that goes for replacing worn-out machinery, but a substantial part is for increased productive facilities. Taxes can get so high as to trim this expansion sharply.

V V

» It has been said: "Failure is one thing that can be achieved without effort."

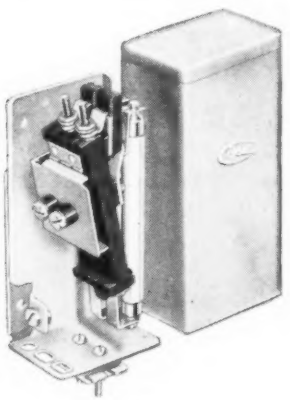
Construction

With the Double
and America's

cook type RO

outdoor sub-station protector

A very rugged Protector, assembled on a bracket of heavy steel—instead of porcelain—to take rough handling and subscriber abuse without danger of breakage. Other outstanding features:



1. Uses a Cook Standard Type H Protector unit with molded bakelite base for high resistance to electrical and physical shocks.
2. Protector unit contains both primary and secondary arresters. The secondary arrester provides a path to ground for lightning should the fuses be blown.
3. Mountings contain heavy studs for connecting drop wires and ground.
4. Equipped with heavy zinc weatherproof hood, and bracket for mounting on post, wall, etc.
5. All structural parts, including hood and bracket, are grounded.

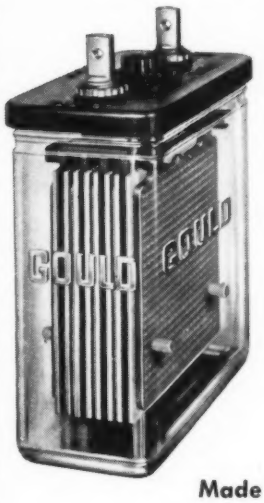
STROMBERG Telephone CARLSON

TELEPHONES, SWITCHBOARDS • SOUND

Materials and Supplies . . .

Guarantee of Stromberg-Carlson Leading Manufacturers . . .

the battery that lasts practically forever

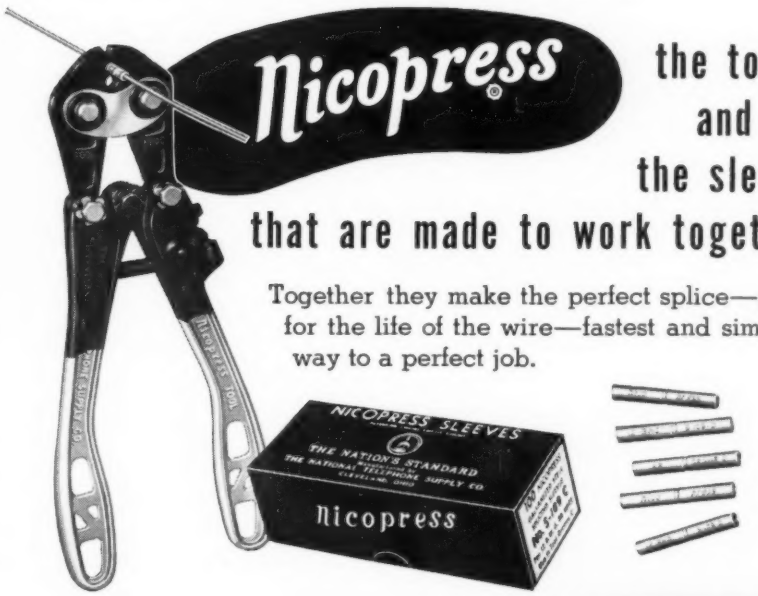


gould planté

For long life and uniform dependable service, no other telephone battery equals the Gould Planté. It has rolled up amazing performance records, remaining in active full-float service for 20 years, 30 years and longer!

In the Planté, *all* of each positive plate is pure lead, containing *no* antimonial impurities. Thus, Gould has eliminated the primary cause of self-discharge, capacity losses and shortened battery life. Planté batteries float at constant voltage and maintain rated capacity all their life. Because they almost never need service, maintenance is negligible. If you would cut battery costs to a minimum, choose Planté.

Made by **GOULD-NATIONAL BATTERIES, INC.**



the tool and the sleeve that are made to work together

Together they make the perfect splice—good for the life of the wire—fastest and simplest way to a perfect job.

flotrol automatic battery charger

Model 1200 B 24 Amps. 50 Volts

maintains constant battery voltage for all loads

The FLOTROL single-phase charger provides automatic charging without moving parts. Output voltage is maintained constant within ±1% from 10% load to 100% load. Compensation for variation in input voltage is automatic and practically instantaneous.

With normal line voltage, a FLOTROL will deliver 125% to 150% of rated current, and on maximum input voltage, as high as 150% to 200%. All FLOTROL parts will withstand severe overload conditions without damage. Battery activity is reduced to a minimum and the longest possible life is assured.

WRITE for Bulletin 160—a complete catalog of FLOTROL Models for single-phase operation.

Distributed by STROMBERG-CARLSON

ROCHESTER 3, NEW YORK

EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL INTERCOMMUNICATION SYSTEMS • TELEVISION, RADIOS AND RAPID PHONOGRAP

Courts and Commissions

Southern Bell to Get 6.5% Return in North Carolina

North Carolina Utilities Commission on Apr. 28 authorized Southern Bell Telephone & Telegraph Co. to increase its rates so as to increase its gross revenue in North Carolina by approximately $1,239,200 a year, effective on bills on and after May 1.

The company had requested an increase of $1,817,476 a year (TELEPHONY, Mar. 8, p. 32), but the commission said this would have given the company a 6.89 per cent return on its investment, and that it would have been "in excess of a reasonable rate of return." The $1,239,200 granted, the commission said, will give the company a return of about 6.5 per cent and "will result in sufficient earnings to the company, and will result in fair and reasonable rates and charges for the services rendered to the public."

The new rate schedule allowed by the commission does not increase residence charges, but business rates were increased, as well as intrastate toll rates for short distances, and other miscellaneous charges.

The paystation charge, which was five cents, was increased to 10 cents.

V V

Lincoln T&T Buys Nebraska Independent

Nebraska Railway Commission has approved the application of Lincoln (Neb.) Telephone & Telegraph Co. to incorporate and consolidate with its holdings the properties, franchises and exchanges of Crete Telephone Co.

The latter, with more than 1,600 stations, is operated from Crete, 20 miles west of Lincoln, and is in the heart of the territorial area of the Lincoln company. The order also carries authority to apply applicable group rates to subscribers as previously established for the Lincoln company. The company has had a large stock interest in the Crete corporation for years, and now owns all of it.

The Lincoln company has announced that William McOmber will remain as manager of the exchange at Crete.

V V

Spokane, Wash., Independent Seeks Increases in Idaho

Idaho Public Utilities Commission recently received an application from Interstate Telephone Co., Spokane, Wash., for an increase in rates at the company's exchanges in Idaho.

The company said it needed the raise to provide $217,735 for operating costs and an improvement program in northern Idaho.

Dial conversion already is progressing in Kellogg and Bonners Ferry, company officials said, and a $900,000 dial conversion and improvement project also is contemplated for Coeur d'Alene this year.

V V

Du Bois (Neb.) Independent Rate Increase Authorized

Du Bois Telephone Co. has been authorized by the Nebraska Railway Commission to increase rates for all of its 249 stations by 50 cents a month.

The urban distribution system is all metallic as is the rural plant except for 10 stations still grounded. Under the new schedule of net rates, the company can charge $3.00 for one- and two-party business, and $3.50 for all residence and all rural stations. It is estimated the new rates will add $1,494 to annual gross income.

Operating revenues for 1951 were $7,361 as against operating expenses of $5,538 and $235 in taxes, leaving a net profit of $1,787. Based upon the present telephone plant, the new schedule will increase gross revenues to $9,055, which with the estimated operating expenses and taxes, will leave a net profit for the next 12 months of $2,077, which is a return of 6.635 per cent upon the approved rate base of $31,300. The new rates become effective July 1.

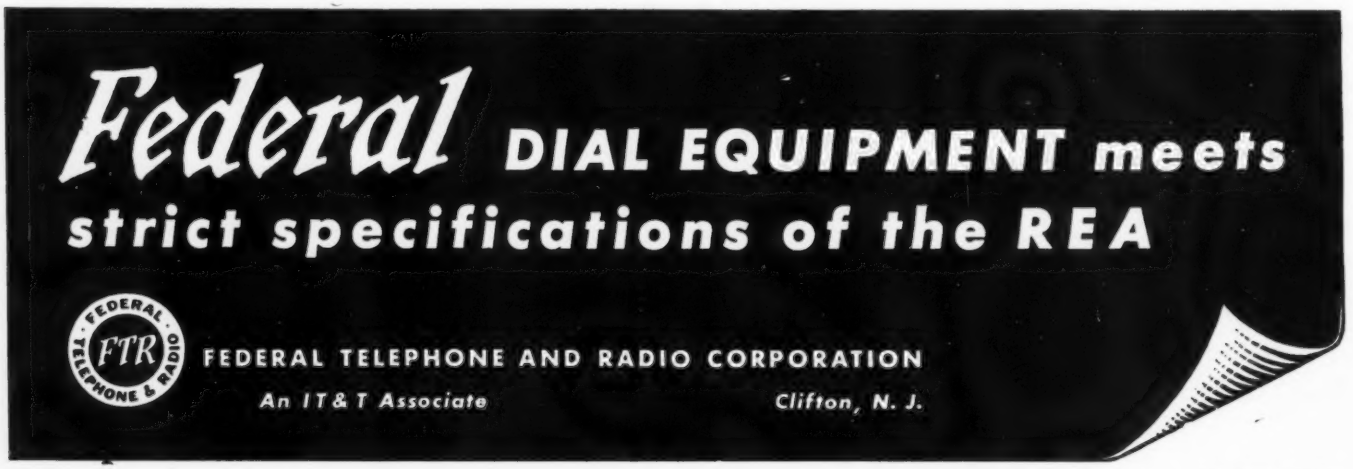
V V

Georgia Company with REA Loan Secures Dial Rate Approval

Approval of increased rates upon conversion of exchanges to dial was granted on Apr. 22 by Georgia Public Service Commission to the newly formed REA co-op, Planters Rural Telephone Cooperative, Inc., which plans conversion of its Guyton and Pineora exchanges to dial and other new rural facilities, including four unattended dial offices.

The commission noted that the cooperative's estimated investment in telephone plant and equipment upon completion of the improvement projects will amount to $467,880 after provision for estimated engineering fees of $25,374, contingencies of $43,039, working capital of $3,500, and materials and supplies of $2,000. Of the total $467,880 required, $420,000 is to be obtained from the Rural Electrification Administration (REA) on a 35-year mortgage loan at 2 per cent interest. The balance of equity capital, $47,880, will be obtained from an anticipated 1,197 subscribers through membership fees of $40 per subscriber.

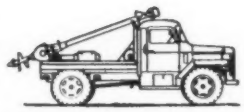
Unattended dial exchanges, the commission order continued, are planned for the towns of Hilltonia, Woodcliffe, Dover and Newington. Extended area


Federal DIAL EQUIPMENT meets
strict specifications of the REA
FEDERAL TELEPHONE AND RADIO CORPORATION
An IT&T Associate
Clifton, N. J.

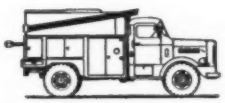
What are your Truck Problems?

FWD offers 78 combinations of trucks and equipment

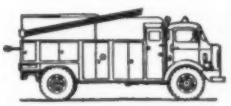
to answer a wide range of needs



FOR CONSTRUCTION — Consists of earth-boring machine with integral derrick, winch and platform body . . . on light-duty, medium-duty or heavy-duty FWDs.



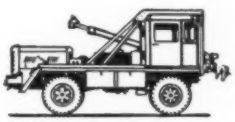
FOR MAINTENANCE— Conventional 3-man cab with line maintenance body, winch, derrick. Combines with light-duty, medium-duty or heavy-duty FWDs.



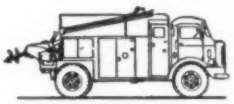
FOR MAINTENANCE — 2-man cab over engine style with crew compartment in maintenance body. Winch and derrick. Matched with medium-duty FWD chassis.

FOR MAINTENANCE — Conventional 3-man cab with crew compartment in maintenance body. Winch and derrick. For light-duty, medium and heavy-duty FWD's.

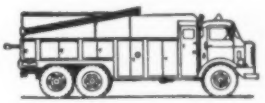
GENERAL PURPOSE TRANSPORT — H 6 x 6 with 5th wheel for use with lo-boy, semi-trailer, full 4-wheel or pole trailer. Winch mounts behind 3-man cab. Tool compartment under platform.



FOR CONSTRUCTION (and maintenance of energized lines) — For one-man operation. Patented. Front-mounted earth-boring machine with integral telescopic derrick — rear-mounted engine — winch. For heavy-duty FWD.



ALL-PURPOSE LINE MAINTENANCE AND CONSTRUCTION — 2-man cab-over-engine. Crew compartment in combination platform and line body. Includes earth-boring machine, derrick, winch. For medium-duty FWD.

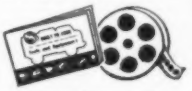


FOR MAINTENANCE — Heavy-Duty 6 x 6 has 2-man cab over engine. Crew compartment built into maintenance body. Matched combination includes winch and derrick.

FWD is the central source for complete mobile workshops . . . including cabs, winches, derricks, boring machines, platform and line bodies. These components, mounted on famous FWD chasses, give you an unparalleled choice for line maintenance and construction.

Specify FWD to lower your costs and accelerate schedules on both routine and emergency service.

Ask for a copy of the new FWD "Code Book," which makes it easy for you to select the motorized unit best suited to your work. In addition, we will show you a 20-minute movie, demonstrating outstanding FWD performance.

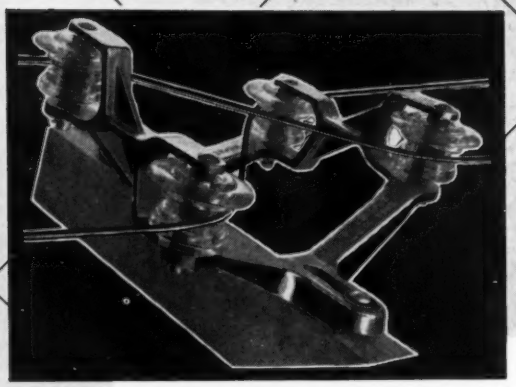


THE FOUR WHEEL DRIVE AUTO CO., Clintonville, Wis. • Canadian Factory: Kitchener, Ont.

World-Wide Sales and Service

XUM

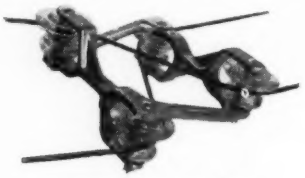
CASE tranposition BRACKET



CROSSARM TYPE

The Case Crossarm Type and Span Type Transposition Brackets have proven to be the most practical method of transposition. Easy tensioning, proper wire spacing and line balancing are all accomplished economically and quickly with this lightweight aluminum bracket.

Revolving insulators on the bracket assure ease of pulling and each insulator is equipped with a rubber bushing which acts as an insulator in case of glass breakage. Tying in the line wires is eliminated and tension in adjacent spans is equalized.



SPAN TYPE

THE ECONOMICAL WAY TO TRANSPOSE

FOR COMPLETE INFORMATION
WRITE FOR CIRCULAR 1251-A

BUCKEYE TELEPHONE & SUPPLY CO.

1250 KINNEAR RD. COLUMBUS 12, OHIO

service will be provided among these exchanges and one at Sylvania, Ga., with switching to be provided through the unattended dial office of the South Georgia Telephone Co. in Sylvania. The Planters company also plans to establish toll connections with the Millen exchange of Southern Bell Telephone & Telegraph Co.

Annual debt service costs on the REA loan are estimated by the co-op to be $16,800 yearly. Annual plant replacements are figured at $6,493. The total of these amounts, $23,293, should be available, according to the cooperative, from depreciation expense of $16,131, and net revenues of $9,618. Through adjustment of the proposed rates, urban downward and rural upward (see list below), the commission arrived at net revenues of $10,296. Even considering that $17,931, instead of $16,800, will be required annually to service the REA loan beginning the third year, the commission observed that the rates approved provide for this increased cost.

Approved rates, applicable upon conversion of each exchange to dial, are:

One-party business	$5.00
Two-party business	4.00
Four-party business	3.00
One-party residence	3.25
Two-party residence	2.75
Four-party residence	2.25
Rural multi-party business	4.50
Rural multi-party residence	3.50

Mileage charge for exchange service beyond base rate area:

- One-party, 40 cents per ¼-mile per month
- Two-party, 20 cents per ¼-mile per month
- Four-party, 10 cents per ¼-mile per month

Also on Apr. 22 the Georgia commission approved the borrowing of $420,000 by the Planters Rural Telephone Cooperative, Inc., from the REA, payable in 35 years, interest at 2 per cent.

V V

Approves N.C. Intrastate Toll Raise for All Companies

An increase in intrastate toll rates in North Carolina, applicable to all companies, was authorized on Apr. 30 by North Carolina Utilities Commission in order to maintain uniformity in toll charges after the commission had granted a rate increase earlier in the week to Southern Bell Telephone & Telegraph Co.

The new schedule changes the mileage basis for long distance calls up to 42 miles. Under the old rate system, calls of from one to 10 miles for four minutes could be made for 10 cents. Under the new schedule, the distance is shortened to from one to eight miles.

There are similar cuts in mileage up to 42 miles.

Effective on May 1, the new rates include: For eight miles and under, 10 cents for first four minutes, compared with 10 cents for up to 10 miles under old schedule; for distances up to 12 miles, 15 cents, compared with old schedule allowing 14-mile calls for 15 cents; 18-mile calls, 25 cents for first three minutes, compared with 20 cents under old rates.

Similar increases are allowed up to 42 miles, and over 42 miles the rates are unchanged.

V V

Oregon Commissioner Approves Three Increases, One Loan

The Public Utilities Commissioner of Oregon on Apr. 24 authorized one rate increase and on Apr. 25 two rate increases and one loan increase.

The first approval was granted to Pine Telephone System, Halfway, for an annual increase in switching rates from 75 cents a month to $1.00 a month, raising annual revenue approximately $795. The commission noted that the Pine company had operated at a loss of $184 and $423 in 1950 and 1951, respectively.

On Apr. 25 Mt. Hood Telephone Co., Dufur, received approval of rates estimated to increase annual revenue by $1,140. Approximately 95 subscribers in so-called suburban-mutual service and suburban service areas will get increases of $1.00 per month. The company operated during 1951 at a loss of $416 despite a rate increase in April of that year, the commission noted. The paystation charge was increased from five cents to 10 cents.

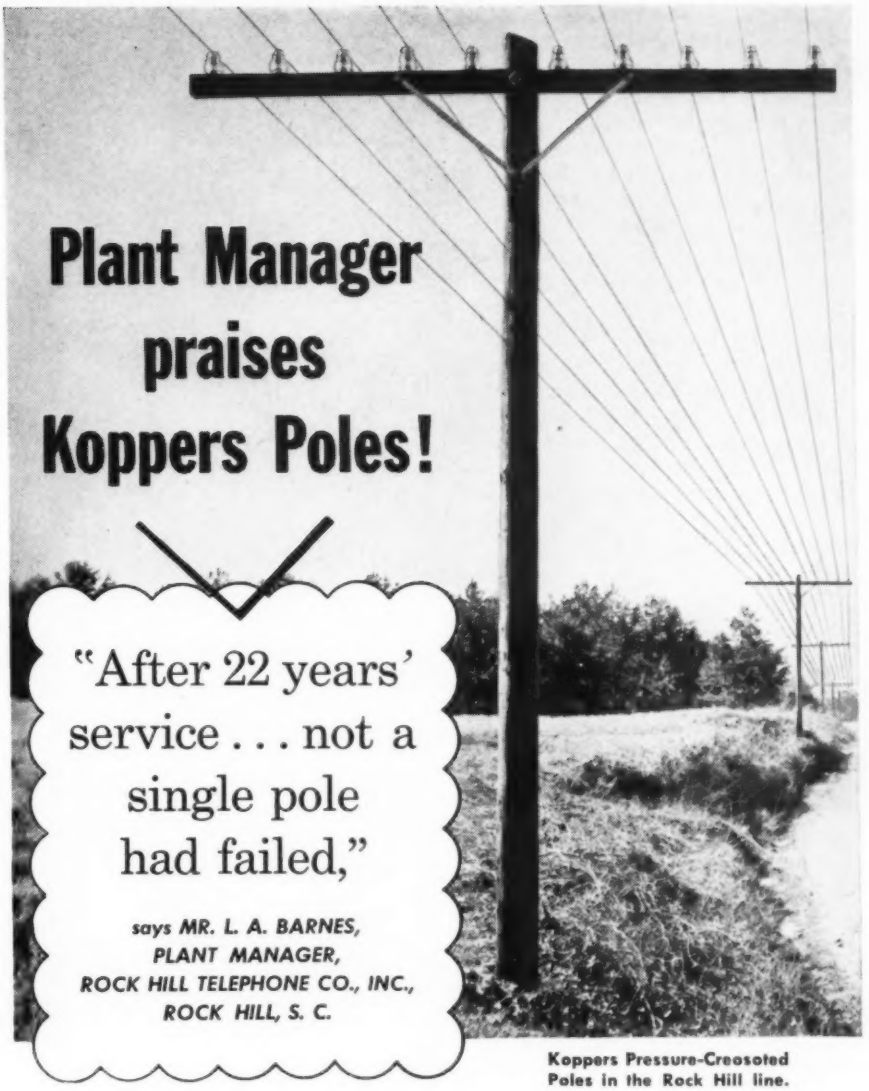
Panhandle Cooperative Telephone Co., Halfway, also was authorized to raise rates approximately $1,866 annually, by increasing rates to residence subscribers by 50 cents per month and to business subscribers $1.50 per month. Company operating income in 1951 was $451.

Also on Apr. 25, Independent Telephone Co., Pilot Rock, was granted approval to increase the loan the company secured from Stromberg-Carlson Credit Corp. by $10,000 to $92,000.

V V

Ask N. C. Service Transfer

Customers of Old Town Telephone Co., Winston-Salem, N. C., have petitioned North Carolina Utilities Commission asking that the Old Town system in Old Town and Lewisville be replaced by Southern Bell Telephone & Telegraph Co. service (TELEPHONY, Jan. 5, p. 30). A public hearing has been scheduled.


Plant Manager praises Koppers Poles!
"After 22 years' service . . . not a single pole had failed,"
says MR. L. A. BARNES, PLANT MANAGER, ROCK HILL TELEPHONE CO., INC., ROCK HILL, S. C.

Koppers Pressure-Creosoted Poles in the Rock Hill line.

BACK IN 1930, the Rock Hill Telephone Company purchased and erected, in their Rock Hill-Lancaster toll line, a quantity of Koppers Pressure-Creosoted Poles. After 22 years' service, an inspection was made jointly by the telephone company and Koppers Company, and it was found that not a single pole had failed due to deterioration.

Judging from the many cases histories in our files, this company will get many more years of use from their Koppers Poles. With Koppers Pressure-Creosoted Poles, it's not just a question of getting *long* service . . . users get *trouble-free* service, too. This makes line operation better, easier, more economical.

Specify Koppers Full-Length Pressure-Creosoted Poles. You'll find that, through the years, these poles *stay* sound and serviceable.

KOPPERS COMPANY, INC.
PITTSBURGH 19, PA.

KOPPERS PRESSURE-CREOSOTED WOOD

SW Bell Asks Increase of $1,900,000 in Arkansas

Southwestern Bell Telephone Co. on Apr. 21 asked for rate increases in Arkansas. The new rate schedule, filed with the Arkansas Public Service Commission, would increase the company's annual revenues by about $1,900,000.

At present, the company is billing its customers on the basis of a schedule filed in August, 1950, and placed in effect under a bond.

The company sought then to increase its rates by $4,600,000 a year, but after a hearing the commission allowed $3,605,591. The commission order was appealed and the Arkansas Supreme Court held in February that Southwestern was entitled to $3,177,000 (TELEPHONY, Mar. 1, p. 28; Apr. 19, p. 26).

Warren E. Bray, Southwestern Bell's general manager for Arkansas, said the rate application "will neither affect nor delay the refunds due most of our customers" as a result of the supreme court decision.

As a result of increased costs of providing service, Bray said, intrastate earnings have dropped to less than 4 per cent. The proposed increases would raise Southwestern Bell's earnings to 6 per cent, he said.

The average cost of installing telephones has increased sharply since 1950 because of the higher costs of new equipment, wages and tools, Bray said.

Southwestern Bell has added 10,000 new telephones in Arkansas since the first of last year, and now serves 209,000 telephones, he explained.

"We have reduced the number of unfilled applications for telephone service from 8,000 in June, 1950, to 2,600 at the end of February," Bray said.

"The unfilled applications from party-line customers for a different type of service have been reduced during the same period from 15,000 to 7,300. All this has been accomplished in spite of the fact that new orders continue to come in at the rate of more than 3,000 a month."

Bray said Southwestern spent 9 million dollars for construction during 1951 and plans to spend 10 million dallars in Arkansas in 1952. He noted, however, that "this investment of new money cannot be made in Arkansas unless there are prospects of fair earnings."

V V

Oregon Loan Approved

A loan of $35,000 to Columbia Utilities Co., Medford, Ore., from Hood Brothers, secured by promissory notes and bearing interest of 5 per cent, was approved by Oregon Public Utilities Commissioner Heltzel on Mar. 14.

V V

Bill to Disallow New Evidence On Appeal Ruled Invalid

In an advisory opinion to the Massachusetts House of Representatives, the state supreme court on Apr. 30 ruled unconstitutional a pending bill to disallow the hearing of new evidence in appeals to the courts from decisions of the Massachusetts Department of Public Utilities.

The high state court held that the measure would be invalid, as presently drafted, because it "would deprive the court of all power to determine facts in cases involving questions of confiscation or of denial of constitutional rights."

The opinion stated, however, that such legislation could be enacted if it provided for retention by the court of authority to obtain new evidence by remanding the case to the commission.

NPA Issues Revised Telephone Order M-77

As previously forecast by our Washington Editor, Francis X. Welch, in the Apr. 12 issue of TELEPHONY, the National Production Authority (NPA) on May 6 issued its revised Order M-77 for control of telephone materials. The following changes have been made in the old order:

(1) Small telephone companies serving less than 5,000 stations can write their own material certificates up to $25,000, as compared to $15,000 in the previous order.

(2) The scope of "operating construction" authorized by the order has been extended to all buildings owned by the telephone company, including office buildings, warehouses, garages and even leased buildings where the tenant company is responsible for maintenance, repairs and alterations.

(3) A telephone company may use its own allotment symbol to obtain materials to manufacture a product solely for its own use, such as MRO materials for installations or for minor capital additions.

(4) To conserve copper and aluminum, these materials may not be used for decorative or ornamental purposes.

The full text of the new M-77 order will be published in next week's issue.

CLEARS TROUBLE IN A HURRY

Averages $6.00 Saving Per Fault

This easy-to-use Wheatstone Bridge puts its finger on faults — locates grounds, crosses or opens — enables trouble-shooters to clear lines or cables in minimum time.

A recent survey among users indicates that this Test Set saves from 1 to 8 hours in locating faults, as compared with other methods. In terms of man-hour cost of trouble-shooting, it saves an average of $6.00 per fault. From this average figure, it appears that after locating 25 faults the instrument has saved enough to pay for itself. After its 25th location, this Test Set is actually earning money.

These savings, as well as the benefits of subscriber good-will are yours with the purchase of one of these Test Sets. If more information is required, write for Catalog EF22-53-442(1).

A FREE HANDBOOK explaining methods of using this Bridge for locating grounds, crosses, opens and other faults, will be sent on request. Write for Note Book EF-53-441(1), "Notes on Fault Location in Cables".

5430-A Type U Test Set

LEEDS & NORTHRUP COMPANY, 4901 STENTON AVE., PHILA. 44, PA.
LEEDS & NORTHRUP
MEASURING INSTRUMENTS · TELEMETERS · AUTOMATIC CONTROLS · HEAT-TREATING FURNACES
Jrl. Ad. E-53-441(4a)

Georgia Independent Gets O.K. On Altered Financing Plan

Georgia Public Service Commission on Apr. 22 approved the issuance of $130,000 of first mortgage 5 per cent 20-year bonds and $20,000 of 5 per cent preferred stock by Cairo Telephone Co. This financing plan represented a change from that originally approved by the commission, which called for $150,000 of first mortgage 4 per cent 20-year bonds.

V V

Minnesota Commission Sets Hearings for 33 Rate Cases

Minnesota Railroad & Warehouse Commission has set public hearings in the short time between May 12 and June 6 on the applications of 33 Independent telephone companies for rate increases.

The companies serve 67 communities in Minnesota. The rate increases sought vary from exchange to exchange.

Largest local exchange represented in the applications will be Mankato with 9,980 telephones. Smallest will be Wolverton, with less than 100. Average exchange size is about 500 telephones.

J. C. Crowley Jr., executive secretary of Minnesota Telephone Association, which represents 210 Independent telephone companies, said the 33 members applying for increases "are in a critical position."

"On one hand they are faced with the responsibility of providing good telephone service, expanding and modernizing their plants to meet the public demand," Crowley said. "On the other, they are caught in today's inflationary squeeze."

"Practically all" of the 33 companies plan improvement programs, hinged on the outcome of the rate cases, Crowley said.

Crowley has sent the following suggestions to the applicant companies, pointing out the essential things that management should do prior to the filing of the application:

(1) It should be pointed out that telephone management has very definite obligations to the residents in the communities that it serves.

(2) It must furnish a reasonably adequate telephone service—

(a) Through a force of courteous employes.

(b) By prompt repairs when service interruptions occur.

(c) By promptly investigating any complaints made by the subscriber as to the cause or nature of the complaint. An explanation should be given the sub-

drops last

and last

and last . . .

AND COSTS LESS TOO

WITH ALPHADUCT
NEOPRENE JACKETED
DROP WIRE

You'll be money ahead when you use long lasting Alphaduct drop wire. The tough neoprene jacket is the most effective weather protection ever developed. Alphaduct is scientifically made on modern machinery, is step tested during every stage of manufacture. You can depend on it to cut down on maintenance trips.

Alphaduct's Dumbbell or figure eight construction saves on first costs too. It is less expensive than twisted pair, yet has proved to be every bit as satisfactory. Actually, Alphaduct Dumbbell drop wire has the same thickness of insulation and neoprene jacket per conductor as is used on regular twisted pair. The figure eight construction makes it much easier to split than regular parallel.

Try Alphaduct neoprene jacketed Dumbbell drop wire. It's dated . . . so you can easily check the extra service it will provide. Order today from one of our distributors listed below.

IT'S DATED • FOR YOUR CONVENIENCE AND PROTECTION

ALPHADUCT WIRE AND CABLE COMPANY

MILLTOWN, NEW JERSEY

NATIONAL DISTRIBUTORS — LEICH SALES CORPORATION — CHICAGO, ILL.
REGIONAL DISTRIBUTORS — LINDSAY SUPPLY COMPANY, CLEVELAND, OHIO
PANKEY SUPPLY COMPANY, CHARLOTTSVILLE, VA.

We Can Make
YOUR POLES
LAST LONGER
AND LONGER...
AND LONGER...
AND LONGER...
WITH AN
OSMOSE
INSPECTION AND
TREATING PROGRAM
This program, performed by our highly skilled crews, can save your system hundreds of thousands of dollars in REPLACEMENT COSTS by
1. Absolutely arresting groundline decay of your poles and
2. Giving you up-to-date pole records.
Treatment charge is as low as 4% of replacement costs and pole life is extended for approximately 8-10 years.
Let us send you ALL the details!
Write for Free Book
OSMOSE WOOD PRESERVING CO., INC.
1437 BAILEY AVE. BUFFALO 12, N. Y.

scriber of the conditions found after investigation of the complaint.

(3) Standard rules and practices of the company should be fully explained to the subscriber if requests are made for special services. Bear in mind that discrimination is unlawful.

The above simple rules, if followed and strictly adhered to on the part of management, will build up the best of public relations.

The following information is essential in the presentation of your case for the information of the commission:

(1) What was the date upon which the present schedule of rates became effective?

(2) What has occurred in the way of increases in costs of operation and maintenance since the existing rates became effective? What increase has there been in taxes?

(3) How do the present wages and salaries paid compare with those paid as of the date of the last hearing?

(4) Do you propose to allow further increases to those employed if the schedule of rates asked for is approved?

(5) Has there been any increase in the cost of truck or auto expense since the date of the last hearing? Has there been any increase in costs of maintenance material such as batteries, cords, wire, insulators, instrument parts, receiver shells, mouth pieces and other maintenance materials?

(6) What was your plant investment or book cost at the time of the last hearing?

(7) What was your plant investment as of Dec. 31, 1951?

(8) Regarding this plant investment increase, is this net increase in plant investment after giving consideration to plant retired during this period?

(9) Do you propose to increase your capital investment by conversion to dial operation?

(10) Have you ascertained the costs of apparatus and substation equipment, including labor of installing?

(11) Are you contemplating any extensions or increase in cable capacity? If so, have you prepared an estimate of the costs of same including labor of installing?

(12) Do you propose to extend your pole lines to extend your service? If so, have you prepared an estimate as to the costs of poles, attachments and labor to erect same?

(13) Do you propose to reduce the number of subscribers on rural circuits? If so, have you prepared an estimate as to the number of miles of wire this will require and the necessary labor costs to increase the pole line capacity so as to carry the additional circuits?

(14) *Subscribers' Station Equipment.* Do you propose to rewire the subscribers' premises and place modern carbon and fuse protectors? If so, what is your estimate of the costs, including labor to perform this essential improvement?

Now that you have prepared the estimates as to the capital investments that will be required to install these improvements, have you advised your commercial or businessmen's organiza-

Ericsson

TELEPHONE EQUIPMENT

is acclaimed the world over for highest quality and performance.

Telefonaktiebolaget L. M. Ericsson of Stockholm, Sweden, and associated companies are manufacturers of all kinds of telephone and signal equipment of every size and for every purpose.

•

Represented in the U. S. by

ERICSSON TELEPHONE SALES Corp.
100 Park Avenue New York 17, N. Y.

tions, your newspaper editor, and your subscribers as to the necessary schedule of rates to sustain your increased investment, pay your employes a fair compensation and properly maintain your service so that interruptions in service will be minimized?

If you have done all these things and have your memorandum before you so as to give the right answers from your figures, then you are in a position to testify intelligently without confusion and the proceedings will be shortened to the satisfaction of the commission, the public that you serve, and, when the presiding officer says you are excused, it will be a satisfaction to you and to those who conduct the interrogation.

It is as simple as that. We say: Convince the public that you serve as to the necessity of the increased rates to avoid a diminishing return and encourage new money to be forthcoming so that improvements and extensions can be made to meet the public demands, for only on a fair rate of return will the investor be induced to furnish capital requirements.

If you have compiled the above information and figures for presentation and a story of the necessity for these rates so that management may attain its objectives, we suggest that you publish such information and data in your local newspaper.

In this we feel that we have done our part. We trust that you will do your part in the interests of your company and the public that you serve. Based on facts presented, supported by testimony of competent and experienced witnesses, your petition should be granted. Again we say, *do your part.*

V V

Seeks Missouri Stock Issue

Warrenton (Mo.) Telephone Co. on Apr. 15 applied to Missouri Public Service Commission for authority to issue capital stock consisting of 400 shares of 5 per cent preferred stock and 288 shares of common stock.

V V

Washington Incorporation

Articles of incorporation were filed on Mar. 18 with the secretary of state in Olympia, Wash., for Rainier Telephone Co., with capitalization of $25,000. The incorporators are Homer G. Christensen *et al.*

V V

Lease Sought in Missouri

Novinger (Mo.) Telephone Co. on Apr. 18 applied to Missouri Public Service Commission for permission to lease its property to I. V. Rummerfield, with option to purchase.

V V

Rate Raise to Indiana Company

Indiana Public Service Commission recently authorized the Tocsin Telephone Co., with offices in Decatur, to increase rates.

In the Nation's Capital

(Continued from page 14)

be the presently short supply of materials and equipment, as well as the rapidly increasing demand for new service. On the other hand, Chase thought there were interesting opportunities in this so-called non-optional extended area service program for arrangements between Bell and Independent companies where subscribers of both are in favor of the combined coverage charge. This is especially true, said Chase, where service can be provided without toll charge between adjacent communities and speeded up with direct dial. Chase gave instances where customers were glad to pay extended area rates in excess of previous local rates, plus toll charges in order to rid themselves of the nuisance of intervening toll connections.

The commission engineers also gave considerable attention to the problem of financing small Independent telephone companies. Ralph G. Starke, assistant vice president of the Berkshire Life Insurance Co., Pittsfield, Mass., discussed the availability of insurance companies and banking firms which can cooperatively handle a telephone company's financial needs.

He said that his insurance company had received much helpful and useful information from the public service commission of New York and the New England states. He hoped that other state commissions would adopt a similar policy because it goes to help the little companies do their jobs for the public that much better.

Starke thought, however, that the advent of REA might complicate the situation by creating competitive cooperative systems in service areas not now able to support duplicate facilities. He also expressed the thought that REA loan operations might eventually tend towards the entrance by the federal government into the telephone field as it has already done in the field of electric power utility operations.

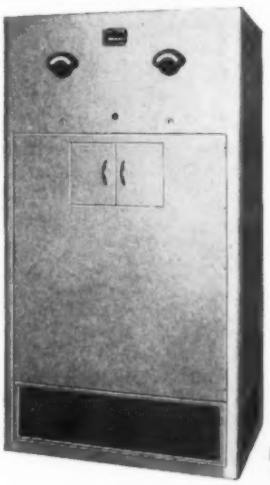
OPS Shift Upsets Rate Case Calm

Ellis Arnall as head of the price control agency may mean a revival of utility rate case interventions. This issue was settled temporarily last December under Arnall's predecessor as director of the Office of Price Stabilization, Michael V. DiSalle.

At that time DiSalle quieted congressional criticism with a letter to

FLOTROL

SENSES THE NEED FOR CURRENT


Model 10KB

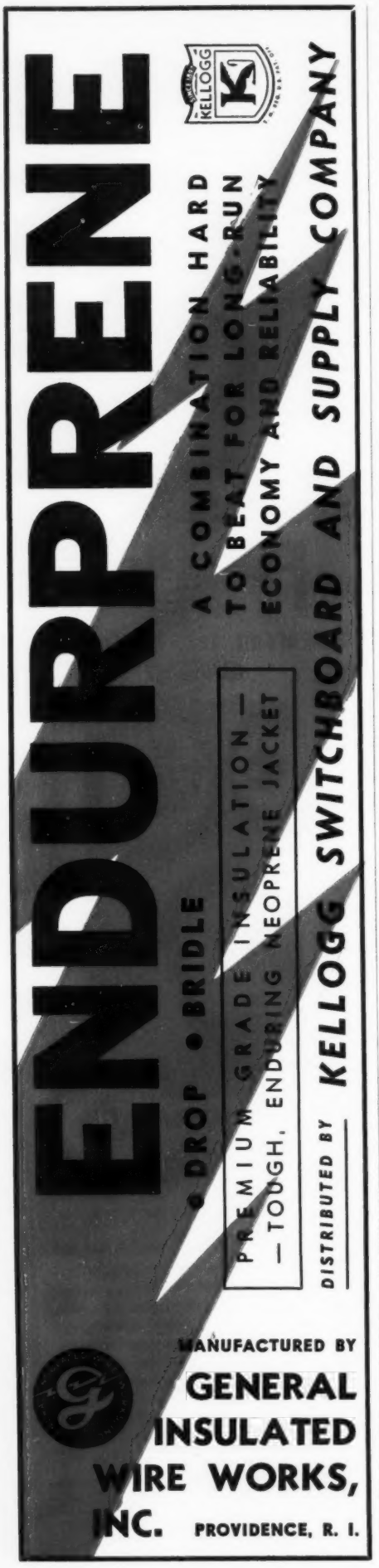
AND SUPPLIES IT!

It's almost unbelievable, the way the FLOTROL output keeps up with the load current—keeps your batteries fully charged—keeps your exchange voltage right on the dot. What's more, it does all this without the use of any moving parts, vacuum tubes, marginal relays, or the like.

If you're planning to replace or add to your charging facilities, don't overlook FLOTROL'S many advantages. Write for Bulletin 160 for complete information on single phase models, from 1/2 ampere to 24 amperes, Bulletin 161 describes three-phase models from 25 amperes to 200 amperes.

LORAIN PRODUCTS CORPORATION
3122 F STREET LORAIN, OHIO

FLOTROL PARTNERS IN DEPENDABILITY SUB-CYCLE



Chairman Maybank (D., S. C.) of the Senate Banking Committee, pledging that OPS would not get into utility rate cases not involving wholesale service unless there were special circumstances threatening the whole stabilization program. Since that time, there have been no new interventions by OPS in rate cases which are not concerned with the sale of utility service for resale to the public. But the departure of DiSalle has caused renewed agitation, especially among OPS local aides on the west coast.

Some local OPS officials want authority to get into all kinds of utility rate cases without clearance through Washington, D. C., headquarters. So far, the OPS Utility Branch in Washington has been keeping the terms of DiSalle's pledge to Congress. There is more than a suspicion that politics are involved.

The west coast OPS regional officials, taking their cue from President Truman, seem to think that stirring up utility issues may be good campaign politics. They would like to get into telephone, transit, and other utility rate cases which have nothing to do with wholesale utility service. This activity would be justified by the "consent" of the regulatory commissions hearing the cases. The local OPS people know that most commissions would not actually exclude them from rate case participation.

OPS Director Arnall may personally have to settle this question one way or the other. Although it would seem a poor time for OPS to be embarking on such a controversial course (when Congress is already considering dropping or trimming OPS authority over prices in the next Defense Production Act), some of the OPS people apparently feel that the stakes are worth the risk. They point out privately that OPS is not in good standing with Congress anyhow, so that more utility rate case activity would not make very much difference.

So far, Director Arnall has taken a pretty strong line on continuing OPS authority and even strengthening it. It is generally expected that Congress will reluctantly continue most of the wage and price controls in extending the Defense Production Act, along with the material controls. But unless Arnall decides to curb the utility rate case promoters in his regional offices, it may take another showdown between Congress and OPS before the issue is settled again.

REA Swinging to Telephone Loans?

The REA is shifting its emphasis towards rural telephone loans. Several changes are to be made, effective July 1, which mean an increase of 50 per cent in the telephone staff. This will be done by shifting REA personnel out of its electrification program. Two new divisions, a Telephone Loans Division and a Telephone Engineering Division, will be established with a view to getting REA's telephone loan program into high gear. Heretofore, telephone loans were administered by units responsible for both the electric and telephone programs. *(See story on another page for complete REA organizational changes.)*

The early completion of rural electric distribution is the reason why REA is turning more towards the telephone loan business. In its appropriations for fiscal 1953 (soon to be passed by the Senate), REA will have 25 million dollars in telephone loan authority, which will amount to one-half of the new lending authority for rural electrification loans—first time the telephone program has approached such a comparative position.

REA rural electric loans on the other hand are now trending steadily towards generation and transmission, as distinguished from rural *distribution* of electricity. Although only one-fifth of all REA electrification loans to date have been for generating and transmission, 80 per cent of these were made during the last five years.

Outside Plant Maintenance

(Continued from page 16)

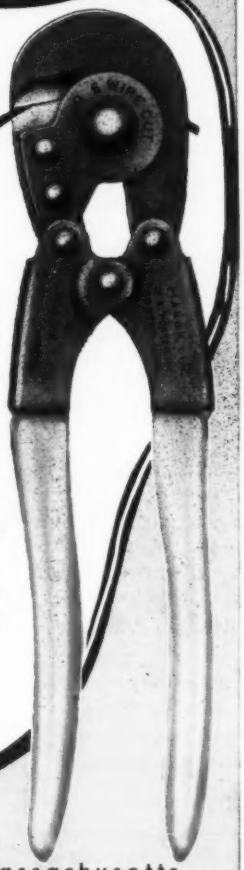
tor to furnish current for operating the electric chain saws. Such a unit usually has a capacity of 1½ to 2½ KW at 110 volts ac. It is small and sufficiently compact to be stowed easily in an exchange maintenance truck. If the engine-generator has to be moved closer to the work, it can be carried by hand.

Conclusion

We have found that a well-planned program of maintaining our outside plant is now showing good results in reduced maintenance costs, long life of the outside plant, and subscriber satisfaction with telephone service.

The introduction of rural electrification and the expansion of rural dial telephone service brought problems that seemed quite difficult to solve at the time. We now realize, although we incurred rather considerable expense in eliminating noise induction and unsatisfactory dial operation on rural lines, the corrective measures greatly improved transmission and signaling on

PORTER WIRE CUTTERS



for

HIGH TENSILE STRENGTH TELEPHONE WIRE

HandKliP 6B Wire Cutter

Cuts 109E hard drawn telephone wire efficiently and quickly. Also cuts cable, rods, baling wire and bolts.

Round-edged jaws for greater durability . . . stands up under long hard usage.

See your supplier NOW!

H. K. PORTER, INC.
Somerville 43, Massachusetts

SERIES OF BOOKS ON

Foremanship and Supervision

by HARRY C. WALKER, Ph.D., *Plant Training Supervisor*
SOUTHERN BELL TELEPHONE AND TELEGRAPH CO.

In these three books Dr. Walker gives us the fruit of a quarter century of experience as a craftsman, foreman, engineer, supervisor, conference leader and teacher in industry. Written in simple, straightforward English they have been recognized as outstanding manuals for training foremen and supervisors.

★ **ORAL EXPRESSION IN SUPERVISION is designed to aid the foreman in making talks to his men, leading conferences, teaching industrial subjects and holding interviews. $1.00 each.**

★ **THE FUNCTIONAL ELEMENT IN SUPERVISION is a basic analysis of the foreman's duties. $1.00 each.**

★ **THE HUMAN ELEMENT IN SUPERVISION is an application of the principals of personnel counselling to foremanship. $1.00 each.**

TELEPHONY PUBLISHING CORP.
608 SOUTH DEARBORN STREET CHICAGO 5, ILL.

GOING IN FOR GOOD

Kennecott Telephone Cable has achieved a reputation for long-lasting service.

Every step of the way—from raw materials to final product, Kennecott experts check and re-check to make certain that all Kennecott cable is of the finest quality.

Kennecott is the name to remember when you order cable. Call your nearest Chase sales office for full information.

CHASE BRASS & COPPER CO.
Waterbury 20, Conn.
DISTRIBUTOR FOR
KENNECOTT WIRE & CABLE CO.
SUBSIDIARIES OF KENNECOTT COPPER CORPORATION

CHASE WAREHOUSES and OFFICES:

Albany†	Chicago	Denver†	Kansas City, Mo.	New York	San Francisco	
Atlanta	Cincinnati	Detroit	Los Angeles	Philadelphia	Seattle	
Baltimore	Cleveland	Houston†	Milwaukee	Pittsburgh	Waterbury	
Boston	Dallas	Indianapolis	Minneapolis	Providence		
			Newark	Rochester†	(†sales office only)	
			New Orleans	St. Louis		

XUM

ALL the strength and durability inherent in steel are combined—with definite economies— in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of *Crapo* Galvanized Products near you or write direct for further information!

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

these lines. We also eliminated cross-talk trouble on the lines, because of the transpositions that had to be made to reduce noise induction. All of this was of considerable benefit to our relations with the subscribers, particularly those residing in rural districts.

Prior to the advent of rural electrification, we had trouble in getting permission from owners to remove trees and shrubs from right-of-ways abutting their properties in order to keep our lines free from trouble. When the REA built their lines into the country to serve farms, these property owners found that, if they wanted to get electric light and power for their farms, they had to allow the power district to clear the right-of-ways of obstructing plant growths. They also found their telephone service was satisfactory only to the extent that their lines were free from tree contacts. The net result is that these owners now are granting permission for the needed clearance work in most cases.

Only by following a well-organized maintenance plan can we hope to give a satisfactory grade of telephone service and keep our maintenance costs at a minimum.

Ohioans and Enterprise

(Continued from page 22)

proved service or greater efficiency. A temporary loan, substantially to replace other indebtedness or to provide for deferred maintenance, is not considered sound. Lastly, since a commercial bank must have confidence that a company's management is fully qualified to operate the company in a sound manner, capable management is a prerequisite to a bank's willingness to extend credit. In this connection, it is necessary to know that the company is either large enough or will become large enough to retain management in competition with other sources of employment."

The telephone industry was challenged to find out why the public is opposed to small increases in telephone rates, when it is paying prices that have more than doubled for other services and commodities, by Leon F. Roberts, Portsmouth, vice president, Ohio Consolidated Telephone Co. in an address titled "The Court of Public Opinion."

"Why is it people will pay $1.12 a pound for 30-cent beefsteak, $1.25 for a 50-cent haircut, and $80 for a $40 suit of clothes, with only a certain amount of grievous grumbling, and then, when the local telephone company proposes to increase its rates in a belated and feeble effort to withstand the surging tides of sweeping inflation, these same people organize a mass revolution, scream to high heaven before the various regulatory bodies throughout the land, and drag us into court on the theory we are all guilty . . . until we prove our innocence beyond any reasonable doubt?" Roberts asked.

He said it was about time that telephone companies found the answer to this question. He offered three possible reasons, based on a survey of public opinion of 700 to 800 customers in 40 communities, as follows:

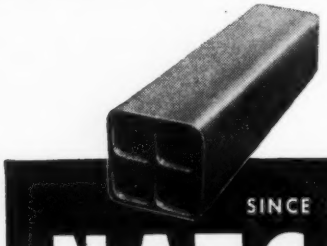
(1) The great bulk of telephone subscribers are totally ignorant or uninformed, or misinformed, about the telephone business, how it operates, and of the miracles it does perform.

(2) The great majority of these people are thirsty for knowledge in this respect, and that, when given this knowledge, they

(3) Lose some of their antipathy and belligerence towards rate increases, towards fancied or real service inadequacies, etc.

Roberts recommended that all telephone companies inaugurate or accelerate programs to adequately inform the public as to their problems and needs.

The last number on the program was a discussion on "How Other Depart-



SINCE 1889
NATCO
CLAY CONDUIT
The proved and standard Protection for Underground Telephone Cables.
Cheapest in the long run. Highest quality and a full line of shapes.
National Fireproofing Corp.
327 FIFTH AVE.
PITTSBURGH 22, PA.

Telephone outside plant construction of all types.
MULLEN ELECTRIC COMPANY
2002 E. Wisconsin Avenue
Appleton, Wisconsin

CYRUS G. HILL
ENGINEERS
PLANT — TRAFFIC — COMMERCIAL
VALUATIONS AND ORIGINAL COST
231 S. LA SALLE ST., CHICAGO 4

SLOAN, COOK & LOWE
CONSULTING ENGINEERS
120 SOUTH LA SALLE STREET
CHICAGO
Appraisals—Original Cost Studies
Depreciation, Financial, and Other Investigations

Installation Specialists
CENTRAL OFFICES
INSTALLED—MODIFIED—ENLARGED
COMMUNI-CATERING
P.O. BOX 6712 CHICAGO 7, ILL.

STATION INSTALLERS
Cable Splicers Construction Crews
Experienced Crews for Any Size Job
HENKELS & McCOY
6100 N. 20th St., Philadelphia 38, Pa.
Now Operating in 14 States

INSPECTION SERVICE

Of poles, crossarms, and preservative treatments. Analyses of wood preservatives. Inspectors stationed throughout U.S.A.

A. W. WILLIAMS INSPECTION CO.
MOBILE, ALA.

ATLANTIC
Creosoting Co., Inc., 17 Battery Pl., N. Y. C.
Creosoted Pine Poles
Crossarms . . Conduit
PLANTS AND OFFICES
New Orleans, La. Jackson, Tenn. Boston, Mass.
Winnfield, La. Louisville, Miss. New York, N. Y.
Norfolk, Va. Savannah, Ga. Philadelphia, Pa.
Annapolis, Md. Chicago, Ill.

POLES
CREOSOTED SOUTHERN YELLOW PINE
LOW RESIDUE COAL TAR DISTILLATE
"Truck Delivery Our Specialty"
THE BAKER WOOD PRESERVING COMPANY
P.O. BOX 355 MARION, OHIO

Cedar Poles
THE MAC GILLIS & GIBBS CO.
1615 E. Royall Place, Milwaukee 2, Wis.
Northern White and Western Red Cedar
Creosote and Pentachlorophenol
Treatments

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co., Phelps, Wis.—Northern White Cedar Poles, plain or butt treated.

Dierks Lumber & Coal Company, Creosoting Division, 700 Dierks Bldg., Kansas City, Mo.—Pressure creosoted yellow pine poles at our modern plant at Process City, Ark., near DeQueen.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

Montana Pole & Treating Plant, Butte, Montana. — Fir Lodgepole Pine Poles. Butt-treated or Full-length treated with Creosote or Penta.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles, Plain or butt-treated.

ments Can Help Us Do a Better Job." Mrs. Betty Braewnig, Norwalk, cashier of Northern Ohio Telephone Co., represented the commercial department; Mrs. Hazel Augenstein, Marion, chief assigner of Ohio Associated Telephone Co., spoke for the plant-equipment department, and Nannie Bartee, Cambridge, traffic supervisor of Ohio Consolidated Telephone Co., represented the traffic department.

Immediately following the convention, representatives of Ohio Public Utilities Commission met with association officials and representatives of Class C and D companies for a panel discussion on the problems confronting the smaller companies.

Directors re-elected by the convention are: H. E. Hageman of Lorain; Gustav Hirsch of Columbus; James I. Hunt of Middlefield; David McC. McKell of Chillicothe; J. D. Park of Kenton, and C. E. Williams of Marion.

Officers elected by the directors are Mr. Cole, president; R. R. Waltz of Delta, first vice president; C. E. Williams of Marion, second vice president, and Lloyd C. Wright of Columbus, secretary-treasurer.

V V

Suttle Equipment Announces Catalog of Accounting Forms

Suttle Equipment Co. has announced the recent issue of a catalog covering its complete line of accounting, billing and toll ticketing and other printed forms.

Suttle points out that the forms in the catalog are not offered as a complete accounting system in themselves. But they do comprise the kind of paper work "tools" which aid in assembling the data required by the various regulatory commissions.

This is the first catalog of its kind the company has issued in 16 years, and represents six months of research on the dozen new forms presented.

Copies may be obtained by requesting Catalog No. 73 from the company at 401 N. Fifteenth St., Lawrenceville, Ill.

V V

"Senator George, chairman of the senate finance committee, said that he had voted for his last tax increase, short of actual war. There can be substantial cuts in the federal outlay, he said, if there is any strong will in the executive departments to accomplish them. Senator George could see no evidence of such will."—Oskaloosa (Iowa) *Herald*.

V V

>> Someone has said that it is better to have one man working with you than three merely working for you.

Here's help in choosing . . .

EMERGENCY ELECTRIC POWER!

Model 10EL
10,000 watts

● Our special folder on Emergency Electric Plants contains helpful information on computing wattage requirements of standby systems, engineering and installation details. Complete specifications of Onan Emergency Electric Plants are included.

We also offer free engineering service on problems involving standby electricity. Write us on any question. There is no fee or obligation.

Onan Builds Standby Plants for any Type of Building
Many sizes—1,000 to 35,000 watts for telephone exchanges, hospitals, radio stations, hatcheries and schools.

see our CATALOG in SWEET'S FILE ARCHITECTURAL

Onan PRODUCTS *Send coupon today*

D. W. ONAN & SONS INC.
7576 University S.E., Minneapolis 14, Minn.

Please send Standby Folder.

NAME_____

ADDRESS_____

CITY_____ STATE_____

CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less.
Classified advertisements must reach us 8 days before publication date.

FOR SALE

REBUILT "LIKE NEW" TELEPHONES

DESK STAND, magneto type, baked enamel finish ..... Each $4.00

DESK STAND, common battery, baked enamel finish with dial blank ..... Each $4.00

COMMON BATTERY RINGER BOX, metal, baked enamel finish. Regularly equipped with straight line ringers, induction coil and condenser. Exposed gongs ..... Each $4.50

COMMON BATTERY HOTEL SETS, with separate receiver and transmitter. Finely finished black wood cabinet. Exposed gongs ..... Each $8.00

●

TELEPHONE REPAIR AND SUPPLY CO.
1760 Lunt Ave. Chicago 26, Ill.

FOR SALE

STROMBERG-CARLSON RELAY DIAL SWITCHBOARD, wired and equipped with 100 lines, 10 finders, 10 selectors, 10 connectors, 10 incoming trunk selectors and 10 two-way dial to dial loop type trunks. Complete with power board containing full local line testing equipment and battery charger. Approximately four years of service. Available immediately at $70.00 per line FOB Ocala, Florida. Write: Florida Telephone Corporation, Ocala, Florida.

MAGNETO EXCHANGE—270 stations, grossing $9,500. One of the best small exchanges in North Missouri. Exceptional opportunity. $15,000 down —monthly payments on balance. Laclede Telephone Exchange, Laclede, Mo.

95—KELLOGG 1000 Series, Hi-impedance desk Handsets. Standardizing and these are surplus. In excellent condition, used three years. $15.00 each. One-half and one MF Condensers —new, 20c each. Write Box No. 3196, c/o TELEPHONY.

One A. E.—PAX, Code Call Unit, 3—Ten Point Minor Switches, One (25) Point Rotary Switch, Cable, two Relays, Wall Case, New $175.00
Two only, No. 101-B Terminals, W. E. with Stubs ..... Ea. $25.00
100 North Electric, 20 Cy, Harmonic Ringers, 1000 Ohm each coil .. Ea. $1.00

Prices — FOB CHICAGO, ILL.

INDEPENDENT TELEPHONE REPAIR CO.
2137 West 21st St. Chicago 8, Ill.

FOR SALE

IN STOCK

**New Type Field Wire, D-1-A, tw. pr., 3 steel 4 copper strands per cond., plastic, nylon, lacquered finish ins., latest army type tel. wire, WP @ $5.00/M ft.

**Magneto Ringer Boxes:
3 bar—1000 ohm ..... $6.50 each
4 bar—1600 ohm ..... $7.50 each
5 bar—2500 ohm ..... $8.50 each

**W.E. #202, desk handset telephone, for use with separate bell box; can be used for magneto or C.B. ..... $10.00 each

**Federal Telephone, #802-A, latest type, self-contained desk phone equal W.E. #302 ..... $14.50 each dial blanked

**W.E. #325, weatherproof or outdoor or mine telephone, C.B. or dial service, complete w/F-1 handset @ $35.00 each dial blanked.

**#18/2, tw. pr., DROP WIRE—Ironite type, mfd. by Paragon, weatherproof braided, full coils in cartons or paper wrapped. New material, recent mfr. $16.00/M ft.; FOB destination, USA.

**Glass Insulators, W-T #13, double groove, pony, New, equal H-12 $65.00/M

**Braces, Crossarm, galv. new, Joslyn #7030-30", 20 per bundle @ $28.00/C

All Material Fully Guaranteed and Subject to Prior Sale

Terms: Net; FOB New York.

TELE-WIRE SUPPLY CO., INC.
Distributors of Telephone Supplies
136 Maiden Lane New York 38, N. Y.
HAnover 2-9690

Reconditioned

MODEL 30-C CALCULAGRAPHS ELECTRIC TYPE

Model 30 operates on 20 volt, 60 cycle AC current but is equipped with transformer to operate on any 110 volt, 60 cycle circuit. Write for further details and price.

●

BUCKEYE TELEPHONE & SUPPLY CO.
1250 KINNEAR ROAD COLUMBUS 8, OHIO
Kingswood 0655

12 Line Switchboard—BD 72, unused	$30.00
Handsets out of EE8 Telephones, unused	3.50
Repeating Coils C111, unused ...	4.00
Test Set (Wire Chief) EE 65, unused	25.00
Plugs PL55	.40
W. E. Trans. Units F1	1.25
W. E. Rec. Units HA1	1.25
Trans. Units and Receiver like W.E.	.75
Loading Coils C114, unused	.75
Receiver Caps for Handsets, unused	.15
Handset Hangers, fit all handsets	.35
Commando Pole Jack Boxes with JK24 ..... Ea.	.50
St. Carl EE 70 Head & Chest Sets—New ..... Ea.	2.50
Field Telephones EE8 checked ..... Ea.	17.50
Telephone Ringers MC 131—New	.75
Coils C158—New	.20

TALLEN CO., INC.
159 Carlton Ave., Brooklyn 5, N. Y.

FOR SALE

Handsets W. E. F1W	$7.00 Ea.
Handsets A. E. #41	7.00 Ea.
Heat Coils W. E. #76A	.14 Ea.
Plugs W. E. #47	.60 Ea.
Plugs W. E. #309	.90 Ea.
Cords 2 cond. 5 ft.	.40 Ea.

BROOKLYN TELEPHONE SUPPLY CO.
667 Sixth Ave. Brooklyn 15, N. Y.

WANTED TO BUY

Old, established, nationally known company interested in the purchase of Patents, New Products or Companies that have an application in the telephone field.

CONTACT
BOX NO. 3013, c/o TELEPHONY

HELP WANTED

DISTRICT MANAGER FOR INDEPENDENT TELEPHONE COMPANY operating in Northern California. Position involves overall supervision of exchanges in several communities with both dial and magneto equipment in the Shasta - Cascade outdoor Wonderland Area. Applicant must possess exceptional capabilities in leadership, general business ability, new business promotional accomplishment; also the ability to direct personnel in all phases of district telephone operation. Replies confidential. Furnish complete details of education, experience and compensation requirement in first reply. Write P. O. Box No. 1789, Redding, Calif.

MANAGER WANTED FOR CENTRAL ILLINOIS COMPANY operating four exchanges with 1,100 stations. Dial, Common Battery and Magneto service. Must be able to handle all phases of telephone work and be capable of working with and directing present efficient personnel. Good salary and other benefits. Please give complete reply. Contact Box No. 3193, c/o TELEPHONY.

MANUAL CENTRAL OFFICE EQUIPMENT INSTALLERS and dial or manual central office repairmen wanted. Supervisory and non-supervisory positions open. Attractive salary, working conditions, pension plan and other benefits. Excellent opportunity for advancement. State age, experience and send small photograph. General Telephone Company of Illinois, Illinois Bldg., Springfield.

TWO LINEMEN, preferably young men willing to work anywhere under good supervision. Write: Telephone Construction, Inc., Box 267, Jefferson, Iowa.

LINEMEN AND APPRENTICES. Good pay. Permanent. Good future with new organization. Write for application blank and full details to Box 247, Station F, Buffalo 12, N. Y.

SALESMAN TO COVER MISSOURI AND KANSAS for telephone supply house on commission basis. Car furnished. Write Box No. 3190, c/o TELEPHONY.

CONVENTION NOTICE

****We will be at the New York State Telephone Association convention again this year. Come to our booth and discuss your Pole Line Construction Supply problems and let us tell you about the new Sterling Hydraulic Controlled Earth Boring Machine.****

****We will have on hand samples of items as follows: Lashing Machines, Lashing Wire, Lashing Wire Clamps, Aluminum Cable Blocks, Cross Arms, Locust Pins, Utility Cable Vises, Oak Brackets, Linemen's Leather Goods and Climbers, Ratchet Hoists, Collapsible Take Down Reels, Tackle Blocks, Polyethylene Tape, Load Binders, Glass Insulators and other Pole Line Hardware items. Stocks of the above items are available for immediate shipment from our warehouse in Forty Fort, Pennsylvania.****

WYOMING VALLEY EQUIPMENT COMPANY
1089 Wyoming Ave., Forty Fort (Wilkes-Barre), Pa. • Telephone: Kingston 7-6400

HELP WANTED

MANAGER FOR RAPIDLY EXPANDING, EXTENSIVE GROUP OF WESTERN TELEPHONE PROPERTIES. Must have administrative ability simultaneously to obtain efficient operations and achieve required, sound expansion program. Must have capacity to hire, train and direct personnel in all phases of telephone work. Permanent position carrying substantial opportunity for qualified person. Technical, plant and commercial knowledge and experience absolute requirement. Salary commensurate with qualifications. Replies confidential. Furnish complete details of education, experience and objectives in first reply. Write Box No. 3170, c/o TELEPHONY.

COMBINATIONMAN — permanent position, good wages, numerous employee benefits. Employment also affords opportunity for advancement. Replies are strictly confidential and should include details of experience and objectives. Write Union Telephone Co., Owosso, Mich.

CABLE SPLICERS, Station Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 6100 N. 20th, Philadelphia, Pa.

POSITION WANTED

FIRST CLASS CABLE SPLICER plus Truck and full set of tools. Contact Box No. 3183, c/o TELEPHONY.

FIRST CLASS CABLE SPLICER OR COMBINATIONMAN—12 years' experience, six years Bell. Will go anywhere. Write Box No. 3195, c/o TELEPHONY.

ATTENTION INDEPENDENTS. 16 years' telephone experience including Plant, Traffic, Commercial and Engineering. Can qualify as Engineer, Construction or Plant Superintendent. Write Box No. 3197, c/o TELEPHONY.

YOUNG MAN WITH MORE THAN 20 YEARS' EXPERIENCE in Dial and Manual Central Office Equipment, and possessing executive ability, seeks position with operating company as plant or business manager. Reply to Box No. 3194, c/o TELEPHONY.

SERVICES AVAILABLE

HOLE DIGGING AND POLE SETTING. Experienced men for construction. Satisfactory work, reasonable rates. Write or telephone 45, Robert J. Novak, Lonsdale, Minn.

TELEPHONE CONSTRUCTION, INC.
BOX 267
JEFFERSON, IOWA
Consulting, Engineering, Installation of Telephone Equipment, Cable Splicing, Aerial, Under-ground construction, Central Office Equipment a Specialty.

TELEPHONE CONSTRUCTION
Aerial Cable and Rural Plant, Station Installation—Cable Splicing
Quality Workmanship at Low Cost
MIDWEST UTILITY CONST. CO.
J. W. Packer—Prior Lake, Minn.
Telephone—Minneapolis HY 2808

Cable Splicing—Repairing—Cable Plant Construction—Aerial Spinning and Underground Trenching—Line Construction—Switchboard Repairing . . . ALL WORK GUARANTEED
WILTON ELECTRIC & TELEPHONE CONSTRUCTION CO.
ANDY MUELLER
Wilton Jct., Iowa **Telephone 21**

SPECIALISTS ○ *Our 46th Year*
TELEPHONE FORMS
PRINTING • PLANOGRAPHING
YOUR ORDERS RECEIVE PROMPT ATTENTION
CULLOM & GHERTNER CO.
800 21st AVE., N. NASHVILLE 4, TENN.

TELEPHONE PRINTING
By People Who Know the Telephone Business
SEE THE SUTTLE CATALOG
SUTTLE EQUIPMENT CO.
LAWRENCEVILLE **ILLINOIS**

"ONE, if by land, and TWO, if by sea"

WHEN Paul Revere kindled the flame of freedom, his famous ride took hours. A far cry from the minutes it would take our modern communication systems today.

For more than eighty years now, Hemingray Insulators have been dependably serving the communication and power transmission systems of the world. Neither snow nor sleet, rain nor heat have kept them from faithful performance twenty-four hours a day, year after year.

Experience and continuous research have made Hemingray Insulators the finest obtainable. They are available at most jobbers for immediate delivery . . . in any quantity . . . in types for all telephone and telegraph pole lines.

HEMINGRAY INSULATORS

AMERICAN STRUCTURAL PRODUCTS COMPANY
Muncie, Indiana

SUBSIDIARY OF OWENS-ILLINOIS GLASS COMPANY

Index to ADVERTISERS

	Page
Acorn Insulated Wire Co., The	—
Alphaduct Wire and Cable Co.	37
American Appraisal Co., The	—
American Creosote Works, Inc.	—
American Creosoting Co.	—
American Cross-Arm, Inc.	—
American Steel & Wire Co.	—
American Structural Products Co.	46
American Telephone & Telegraph Co.	—
Ansonia Electrical Co., The	—
Armstrong Cork Co., Glass Insulator	—
Atlantic Creosoting Co., Inc.	43
Automatic Electric (Canada) Ltd.	—
Automatic Electric Sales Corp.	24-25, 47
Baker Wood Preserving Co., The	43
Barco Mfg. Co.	—
Barrett Division, The Allied Chemicals & Dye Corp.	—
Bell Telephone Laboratories	—
Berry & Co., L. M.	—
Bishop Mfg. Corp.	—
Boston Woven Hose & Rubber Co.	—
Brach Mfg. Corp.	—
British Insulated Callender's Cables, Ltd.	29
Buckeye Telephone & Supply Co.	34, 46
Buckingham Mfg. Co., Inc.	—
Burgess-Manning Co.	—
Burroughs Adding Machine Co.	—
C & D Batteries, Inc.	12
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carney & Co., B. J.	43
Cascade Pole Co.	43
Chance Co., A. B.	—
Chase Brass & Copper Co.	41
Christiansen Co., C. M.	43
Churchill Cabinet Co.	—
Coffing Hoist Co.	—
Commerce Service Corp.	—
Commercial Cord & Supply Co., Inc.	—
Communi-Catering	42
Continental Cross-Arm Co., Inc.	—
Cook Electric Co.	30
Copperweld Steel Co.	—
Cornell-Dubilier Electric Corp.	—
C-O-Two Fire Equipment Co.	—
Cullom & Ghertner Co.	47
Dierks Lumber & Coal Co.	43
Dillon & Co., W. C.	—
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	—
Eagle Mfg. Co.	—
Ederer, Inc.	—
Electric Products Co., The	—
Electric Storage Battery Co., The	—
Eppinger & Russell Co.	43
Ericsson Telephone Sales Corp.	38
Everstick Anchor Co.	—
Federal Telephone & Radio Corp.	32
Four Wheel Drive Auto Co.	33
General Cable Corp.	—
General Insulated Wire Works, Inc.	40
General Telephone Directory Co.	—
Gladwin Plastics, Inc.	—
Gould-National Batteries, Inc.	31
Graybar Electric Co.	9
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Henkels & McCoy	42
Highway Trailer Co.	—
Hill, Cyrus G.	42
Gustav Hirsch Organization, Inc.	—
Holan Corp., J. H.	—
Homelite Corp.	23
Hubbard & Co.	—
Idaho Pole Co.	—
Indiana Steel & Wire Co.	42
Insto-Gas Corp.	—
International Business Machines	—
International Creosoting & Construction Co.	43
International Harvester Co.	—
International Standard Electric Corp.	27
John Bean Mfg. Co.	—
Johns-Manville	—
Joslyn Mfg. & Supply Co.	—
Kearney Corp., Jas. R.	—
Kellogg Switchboard & Supply Co.	4-5
Kennecott Wire & Cable Co.	41
Kester Solder Co.	—
King, W. T.	—
Klein & Sons, Mathias	—
Koiled Kords, Inc.	—
Koppers Co., Inc.	35
Leeds & Northrup Co.	36
Leich Sales Corporation	10-11
Lindsay Telephone Supply Co., The	—
Line Equipment Sales	—
Line Material Co., Div.— McGraw Electric Co., The	—
Linen Thread Co., The	—
Loomis Advertising Co.	—
Lorain Products Corporation, The	31, 39
Lowell Insulated Wire, Div. of the Overlakes Corp.	—
MacGillis & Gibbs Co.	43
Mahood, Edwin T.	—
Mall Tool Co.	—
Matthews Corp., W. N.	—
McCabe Powers Auto Body Co.	—
Montana Pole & Treating Plant	43
Moran, John J.	—
Moss Tie Co., T. J.	—
Mullen Electric Co.	42
Mutual Liquid Gas Equipment Co.	—
National Carbon Div.—Union Carbide & Carbon Corp.	—
National Fireproofing Co.	42
National Pole & Treating Div. Minnesota & Ontario Paper Co.	—
National Telephone Supply Co.	31, Back Cover
Neale Construction Co.	—
North Bros., Mfg. Co.	—
North Electric Mfg. Co.	21
Onan & Sons, D. W.	43
Osmose Wood Preserving Co. of America, Inc.	38
Page & Hill, Inc.	—
Paragon Electric Co.	—
Partridge Lumber Co., T. M.	43
Porcelain Products, Inc.	—
Porter, Inc., H. K.	41
Power Equipment Co.	—
Premax Products Div.	—
Ray-O-Vac Co.	—
Raytheon Mfg. Co.	—
Reliable Electric Co.	—
Remington-Rand, Inc.	—
Rhodes & Sons, M. M.	—
Runzel Cord & Wire Co.	—
Schauer Mfg. Co.	—
Sherron Metallic Corp.	—
Signal Engineering & Mfg. Co.	—
Sloan, Cook & Lowe Co.	42
Seymour Smith & Son, Inc.	—
Southern Pine Lumber Co.	—
Stromberg-Carlson Co.	2-3, 30, 31
Sturgis Posture Chair Co.	—
Suttle Equipment Co.	47
Tel-E-Lect Products, Inc.	—
Telectric Co., The	—
Telefon Fabrik Automatic	—
Telephone Answering & Recording Corp.	—
Telephone Construction, Inc.	47
Telephone Repair and Supply Co.	46
Tele-Wire Supply Co.	46
Telkor, Inc.	—
Templeton-Kenly Co.	—
Termite Drills, Inc.	—
United States Motors Corp.	—
United States Steel Corp. American Steel & Wire	—
United States Steel Corp. (Coal Chemical Div.)	6-7
Utica Drop Forge & Tool Corp.	—
Vulcan Electric Corp.	—
Wall Mfg. Co.	—
Weller, G. Louis	—
Western Electric Co.	—
Weston Electrical Instrument Co.	—
Whitney Blake Co.	—
Williams Inspection Co., A. W.	43
Wilton Electric & Telephone Construction Co.	47
The Wiremold Co.	—

Automatic Electric LEADERS IN CARRIER COMMUNICATION Lenkurt

J. N. Petrie, Manager Carrier and Radio Sales, Automatic Electric Sales Corporation

...did you know

Suppressed Carrier Serves 99% of the world's carrier mileage?

This is your BEST proof that Lenkurt SUPPRESSED Carrier is your wisest choice!

Lenkurt SUPPRESSED Carrier offers you all these advantages:

- Requires only one-fourth as much power to transmit the same speech energy as other systems. This means fewer components, less power consumption, fewer tubes.
- Gives you 6 db higher signal-to-noise ratio.
- Insures less interference to parallel carrier systems on other wires since inverted and staggered allocations are possible.
- Means less inter-channel crosstalk from defective line splices.
- Makes toll dial signaling applications simple and economical.
- Lends itself readily to economical automatic pilot channel transmission level regulation.

ALL Lenkurt Carrier Systems are of the SUPPRESSED type. Remember, too: Lenkurt is the originator and developer of the dollar-saving "stackable" carrier system—Lenkurt equipment is world-famous for performance PLUS economy! Write for our new catalog GC-1 today.

Manufactured for

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

They go together

Nicopress TOOLS Nicopress SLEEVES

Together they make the Perfect Splice

The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr.—N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor—INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

Nicopress is the Registered Trade Mark of The National Telephone Supply Company